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The essential structure of practising evidence based practice

A phenomenological description of the experiences of physiotherapists

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THE ESSENTIAL STRUCTURE OF PRACTISING EVIDENCE BASED PRACTICE: A PHENOMENOLOGICAL DESCRIPTION OF THE EXPERIENCES OF PHYSIOTHERAPISTS.

A THESIS SUBMITTED FOR THE DEGREE OF DOCTOR OF HEALTH

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Declaration

I certify that the work contained in this thesis is my own. It has not been submitted previously for a degree at this or any other university. The views expressed are my own and not necessarily those of The University of Bath.

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Summary (300 words)

Evidence based practice (EBP) is an educational paradigm that espouses that clinical decision making should be made through the judicious and conscientious use of best evidence. EBP is predicated on a fundamental principle that therapeutic knowledge is appraised and applied into practice with the ethical imperative to use such knowledge for the good of patient care. Despite the ubiquitous nature of EBP in health care little is known about how physiotherapists use this clinical decision making process and it is not clear as to which theoretical frameworks of practice and knowledge paradigms underpin physiotherapists application of EBP.

Phenomenology seeks to uncover the internal consciousness of phenomena by describing and exploring the lived experience and explores the relationship between what exists in one's consciousness and what exists in the objective world. Descriptive phenomenology was used in this thesis to gain an in depth understanding of how twelve physiotherapists applied EBP in the real and complex world of clinical practice with the objective to explore their experiences and to understand the essence of its practice.

The findings in this study revealed a complex picture comprising of three separate but interrelated themes. Physiotherapists had developed a personal theory of EBP (Theme 1) that guided their behaviour and comprised of an ontological, epistemological and methodological structure. This theoretical and practice framework was uniquely individual and required a complex set of cognitive processes that included knowledge identification, transformation, translation and implementation in specific client situations and practice contexts (Theme 2: translation into practice). To add to this complexity this framework took place within intrapersonal, social and cultural milieus which influenced behaviour (Theme 3).

The study concludes by conceptualising the findings and experiences of physiotherapists into models that could be used to assist educationalists, practitioners and researchers to promote evidence based practice in a pragmatic way.

Introduction

The Research Area

Evidence based practice (EBP) in physiotherapy is an accepted educational paradigm. Health care educational institutions have adopted EBP into undergraduate and postgraduate curricula in an attempt to encourage students and clinicians to use best evidence to inform clinical decision making (Hatala and Guyatt 2002). The inclusion of evidence based practice into education programmes has been driven by numerous organisational and professional body regulatory frameworks such as Clinical Governance and standards set by Health Care Professions Council (HCPC). For example, the HCPC's Standards for Educational and Training clearly outlines the importance of EBP and states that physiotherapy course delivery "*must encourage evidence based practice*" (HCPC 2009:6). Similarly, the Standards of Proficiency, a set of threshold standards necessary to protect members of the public, recommend that physiotherapists "*should be able to engage in evidence-based practice, evaluate practice systematically and participate in audit procedures*" (HCPC 2007:10).

The physiotherapy department at Coventry University recognised the professional imperative for developing students as "evidence based practitioners" and in 2002 introduced a research and evidence based practice module into the physiotherapy curriculum. The EBP module has evolved since then and the module design, structure and delivery continues to be based on the underpinning philosophy that the practice of evidence based physiotherapy should be informed by relevant, high quality clinical research, patients' preferences and physiotherapists' practice knowledge (Herbert et al. 2005:2).

Despite the call for health care practitioners to adopt EBP into their clinical practice, (Leung and Johnston 2006), and despite the popularity of the evidence based practice movement it is not known whether physiotherapists base decisions on best evidence or whether the implementation of EBP results in improved quality of patient care (Nieuwboer 2004). In fact Reilly (2004) postulates that EBP's most basic assumptions are unproven and untested; Buetow et al. (2006) support this argument and state that there is still a lack of empirical evidence to support the notion that EBP produces better health care outcomes. Investigating the impact of

evidence based practice education programmes is an important area of study and is warranted for two reasons: first, it is not known how clinicians put into practice EBP after receiving formal education; and second, it is not known how they connect their EBP knowledge with clinical practice. As Tanner (2008:335) suggests, *"where and how students learn to connect the evidence they have found and appraised to their clinical reasoning and the many judgments they make in practice is relatively unknown"*, and requires further investigation.

Educationalists need to explore and understand the nuances and idiosyncrasies of EBP from the perspectives of physiotherapists themselves. Physiotherapy research to date has not specifically explored how physiotherapists put into practice the principles of EBP and underpinning theoretical frameworks have not been clearly articulated or at best are incomplete (Bithell 2005, Reilly 2004).The aim of this research was to gain in depth understanding of how physiotherapists apply EBP in the real and complex world of clinical practice. Exploring how physiotherapists theorise and conceptualise EBP and exploring their practice rationale represented a unique opportunity to develop and contribute to the educational paradigm of EBP. Recognising the opportunity to develop new research into the theory and practice of this clinical decision making approach formed the basis for this thesis and led to the following research question and objective:

Research Question

"What is the essential structure of practising EBP from the perspective of physiotherapists?"

Objective

To explore physiotherapists' experiences of using EBP and to develop an understanding of its theory and practice.

The Study Structure and Research Approach

This thesis is comprised of a brief introduction and seven chapters. Chapter 1 critically reviews selected literature relating to the theory of EBP. Underpinning theoretical frameworks of practice are discussed, educational research is considered, and research paradigms are explored to understand how they may

influence its application into practice. Chapter 2 describes and justifies the research approach used for this study. For the most part, EBP is not an easily observable behaviour; it is a highly complex, cognitive process which follows a well-defined and published method (Dawes et al. 2005). It is a method of clinical decision making that fundamentally takes place within the mind of the individual. Recognising that EBP is a cognitive process, one that requires the conscientious and judicious use of best evidence to make decisions about patient care (Sackett et al. 1996), led to the decision to use a methodology that explored physiotherapists' consciousness towards the phenomenon of EBP. The rationale and justification for the use of descriptive phenomenology are described in this chapter. Chapters 3, 4, 5 and 6 portray the findings of this study. Chapter 3 summarises the professional, educational and demographic characteristics of the participants. Chapters 4, 5 and 6 consider each of the three main themes identified by this study:

- A personal theory of EBP
- Translating evidence into practice
- The impact of intrapersonal, social and cultural milieus on EBP behaviour

Chapter 7, the discussion, summarises the study's findings. Congruent with the methods of phenomenology "essences" (core units of meaning), as described through the experiences of the physiotherapists, are drawn together to represent the essential structure of evidence based practice. The essential structure is then critically reviewed and the meanings behind participants' experiences are explained within the context of contemporary literature. The conclusions presented in Chapter 8 demonstrate how the findings from this study contribute to the theory and practice of EBP and recommendations for educational development are put forward.

Chapter 1: Literature Review

The Theory and Practice of EBP: A Critical Review

The Nature and Structure of Evidence Based Medicine and Practice

EBM is a cognitive model of clinical decision making; the classical and frequently reported definition of evidence based medicine and evidence based practice is that it is **"... *the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients. The practice of evidence based medicine means integrating individual clinical expertise with the best available clinical evidence from systematic research*."** (Sackett et al. 1996:71, Sackett et al. 2007:3). Greenhalgh (1997) summarises and outlines that it is the science of finding, evaluating and implementing the results of medical research into clinical practice. Literature to date describes it as a process: a process through which clinicians find and retrieve best evidence, critically appraise the evidence for its validity and usefulness and then implement the findings of research into clinical practice; a method for ensuring safe and effective patient care (Davidoff et al. 1995, Oxman, Sackett and Guyatt 1993, Sackett et al. 1996, Straus et al. 2005). Important, and implicit within the above definitions and descriptions, is the notion that this process takes place within an individual's consciousness and is principally a cognitive exercise as denoted by "*the conscientious, explicit, and judicious use of current best evidence*".

The evidence based medicine movement originated from within the biomedical, epidemiological and statistical sciences and it is widely accepted that the methods and approaches used to determine and apply "best evidence" originated at McMaster's University in 1981. The faculty of the Department of Clinical Epidemiology and Biostatistics published a series of articles for the Canadian Medical Association Journal that taught clinicians how to critically appraise medical literature and developed an awareness of the relationship between research and clinical practice (Gray and Gray 2002). EBM was formalised in 1992 in a paper written by the Evidence Based Medicine Working Group (EBMWG 1992), the authors presented the reader with two approaches to clinical decision making. The first approach, referred to as "the way of the past", relied on expert opinion. A second, and a more robust option, was also presented, one that

represented a shift from opinion towards the critical use of medical literature that enabled physicians to make sound clinical judgements: this method was seen as the “way of the future” and was called “evidence based medicine” (Igo 2011).

The popularity of EBM thrived in other areas of health care including physiotherapy, nursing and midwifery (Swinkels et al. 2002) but the term evidence based “medicine” did not fit or reflect the different scientific philosophies, professional values and approaches that different professions held. Subsequently, an alternative term was used that moved away from a biomedical focus to one that enabled clinical decision making in a wider professional context. The term “evidence based practice” was formed: a process that originated from the school and teachings of EBM but an approach that recognised broader health care practices (Igo 2011).

Evidence Based Practice Defined: Theoretical Constructs

Health care professions embraced the notion of EBP and altered the definition to reflect different paradigms of practice. French (2002) cited fourteen separate definitions of EBP and EBM and later Scott and McSherry (2009) cited a further eleven. These proliferations, since the publication of Sackett et al.’s (1996) original definition, represent the considerable efforts made by authors to refine and evolve the definition in an attempt to reflect profession specific requirements.

French (2002:255) identified that most evidence based practice definitions contained essential elements such as “best evidence”, “individual clinical expertise”, “decision making” and “individual patients” and argued that the concept of EBP is made up of particular constructs. These constructs included the notion that EBP is: research based practice, a process for managing information, a clinical judgement or problem solving method, and a process that manages health care in collaboration with the patient. French (2002), although somewhat antagonistic towards EBP, contended that it was simply an amalgamation of previously developed constructs that related to quality assurance and patient care: it was nothing new! Reviewing the many definitions espoused by authors it is clear that they are fundamentally similar in construction and act as guides that determine “what to do”. In physiotherapy the definition took on the following form: “*The practice of evidence based [health care] should be informed by relevant, high quality clinical research, patients’ preferences and physiotherapists’ practice*

knowledge" (Herbert et al. 2005:2). Most published definitions of EBP guide health and social care professionals to use research and best evidence to help them make decisions in collaboration with the patient. But despite the many attempts to define evidence based practice authors have not clearly explicated philosophical underpinnings that guide its application; authors have not articulated a clear epistemological, ontological or methodological framework. For example, the epistemology that guides the use of best evidence is not clear. In physiotherapy what is meant by best evidence? Is evidence limited to experimental research or are other forms of empirical research of value? Similarly, ontological perspectives that influence the application of evidence have not been and are not articulated within any of the espoused definitions. For example, is evidence universal and singular in application or are the realities of applying evidence into practice multiple and diverse? At best, the theoretical frameworks that underpin the application of EBP are assumed, and without clear frameworks that have a basis in epistemology, ontology and methodology, it becomes difficult to articulate the theory behind the teaching and practice of EBP. As French (2002:255) implied, "*it is difficult to find any empirical evidence (research) to support the notion that the term 'evidence' [based practice] is a stable construct*". And, as Greenhalgh et al. (2014) opine, over a twenty year period a wide variation in how EBP is applied remains a problem, namely due to debates around the notion of what evidence is, its relevance and how it should be applied.

A Framework of Practice

The practise of EBP fundamentally involves the transfer of knowledge from best available evidence to the patient but the many definitions are not sufficiently adequate to completely explain the process. The Sicily statement extends the discussion and describes and debates skills necessary to perform EBP and proposes the following five steps:

1. Translation of uncertainty into an answerable question.
2. Systematic retrieval of best evidence available.
3. Critical appraisal of evidence for validity, clinical relevance, and applicability.
4. Application of results in practice.
5. Evaluation of performance.

(Dawes et al. 2005:3)

This model recognises that practitioners need to **ask** appropriate clinical questions (the process of converting clinical situations or issues into answerable questions relating to diagnosis, prognosis, prevention and therapy); **acquire** and track down best evidence (developing knowledge and skills in literature searching); be able to critically **appraise** current best evidence for its validity and usefulness; and, finally, **apply** and **assess** evidence into the decision making process and integrate evidence with patient preferences (Asokan 2012, Straus et al. 2005)

This “how to” method of EBP is important for two reasons: although simple in design, protagonists have suggested that it should be accepted as the basis for health care decision making and define the structure and content for education and training programmes (Dawes et al. 2005, Lewis, Williams and Olds 2011). This implies that the teaching of knowledge, skills and competencies required to practise EBP and then translating these into practice are intimately related. However, like the definition, the five step model is bereft of an epistemological, ontological and methodological framework that guides the application of “best evidence”. The five step model outlines the basic evidence based practice method but does not steer educationalists or practitioners towards a particular “paradigm of practice”. The following section discusses and reviews the key theoretical frameworks that underpin the practice and teaching of EBP.

Paradigms of Evidence Based Practice

The definition of EBP can be seen as the “what to do” and the five step model as the “how to do”; in short, the theory and practice of EBP. Reviewing the definitions and the method, it is noticeable that both of these constructs are bereft of a theoretical and practice framework that guides implementation. Hatala and Guyatt (2002) state that EBP is a distinct paradigm in health and medical care and this assertion recognises that it should be underpinned by set philosophical, epistemological and ontological principles that govern its practice.

Bithell (2005) explains, in her insightful editorial, that the theoretical frameworks that guide physiotherapy practice are not clearly explained and in some cases are poorly developed and infers that this is the case with physiotherapy research and its application in EBP. Bithell (2005) suggests that much of physiotherapy practice is grounded in a model of biomedical care; historically, physiotherapy has

borrowed frameworks that guide practice from medicine, biomedical and the physical sciences in order to rationalise and make the profession more “scientific”. She concludes by arguing that the current state of education and research within physiotherapy does not have, as yet, a cogent theoretical framework that explains physiotherapy practice, research and EBP. Miles (2007:482) continues the debate and argues that for EBP to be meaningfully described as a paradigm it requires a detailed theoretical structure with “explanatory power and substantial empirical corroboration” and contends that currently EBP is still bereft of such a theoretical foundation.

Bithell (2005) suggests that current frameworks that guide EBP in physiotherapy practice are dominated by methods associated with positivism, biomedical models of health care and the physical sciences. Thus, EBP in physiotherapy has evolved from the teachings associated with EBM; in fact the Chartered Society of Physiotherapy (2014) bases its definition of EBP on Sackett et al.’s (1996) previously stated definition. Swinkels et al. (2002) agree and explain that the current research base in physiotherapy is still developing but is dominated by positivist research, usually in the form of randomised controlled trials and other sources of research, including those associated with qualitative research, are often seen as being peripheral and less important. The notion of an underdeveloped theoretical framework “borrowed” from the medical sciences is an interesting proposition and raises the question as to whether the application of EBP is driven by this or other research or practice paradigms. Establishing through which “lens”, or theoretical framework, physiotherapists choose to view EBP should give insight and understandings as to how they apply EBP into clinical practice; currently little or no research has been conducted into this area. The following section critically explores the idea of EBP operating within different paradigms including: the empirico-analytical paradigm, interpretive paradigm and the paradigm of pragmatism.

Evidence Based Practice: An Empirical Analytical Approach

Swinkels et al. (2002) make the observation that political and economic events have driven the physiotherapy profession’s use of EBP towards clinical effectiveness. Subsequently EBP’s epistemological position is one that uses knowledge, research and evidence rooted in a positivist empirical framework. This confirms Bithell’s (2005) observation that implies physiotherapy has borrowed the

concept of EBP from the biomedical sciences**.** Writers in medical epistemology have defined and classified the nature of medical and clinical knowledge and argue that an understanding of the nature and generation of different types of knowledge is vital for health care practice and for the understanding and application of research and EBP. Higgs and Titchen (1995) explain that there are different types of knowledge in Western society and classify these as **propositional knowledge, professional craft knowledge and personal knowledge**; understanding these is important for generating a theory that underpins the practice of physiotherapy, research and evidence based practice.

Propositional knowledge represents what is known in the public domain and is the presentation of abstract, logical and formal relationships between concepts and constructs (Ashcroft 2004, Higgs and Titchen 1995). Within this framework "research" is used to create and generate knowledge in the form of propositions and statements of truth about the world which forms a corpus of knowledge. Ashcroft (2004) describes how knowledge in this classification is generated by research paradigms of which one of these, the empirico-analytical paradigm, currently dominates the underpinning practice of EBP.

The empirico-analytical paradigm is deemed to be the scientific method of generating knowledge and is based in logical positivism; this method has been the dominant approach in the philosophy of science for the best part of a century and relies on observation and experiment to create single underlying truths and generalisations about the nature and events that occurs in medicine and allied health care practice (Higgs and Titchen 1995). The empirico-analytical paradigm provides the foundation for the biomedical model of care and is the dominant approach that underpins the contemporary practice of evidence based practice. It is within this paradigm that health care practitioners use this body of knowledge to understand the biological aspects of human disease and the nature of physical and medical phenomena. Sources of knowledge and information include clinical and biological research in the form of controlled experiments, randomised controlled studies, observational and correlation designs (Ashcroft 2004, Tonelli 1998, Tonelli 2006, Tonelli 2007, Wade and Halligan 2004).

The Evidence Based Medicine Working Group (1992:2422) identified that evidence should be "*derived from formal and systematic clinical research, over alternate kinds of medical knowledge, specifically individual clinical experience,*

expert opinion and pathophysiologic rationale, as grounds for clinical decision making". This statement confirms the notion that empirically based forms of evidence (grounded in the empirico-analytical paradigm) should underpin the practice of EBP. Subsequently, hierarchies of evidence have developed and evolved that support the ideals of the EBMWG. Twenty years on, the idea of clinical effectiveness, based on a hierarchy of clinical evidence within the empirico-analytical paradigm, plays an important part in evidence based health care and is perpetuated by the use of evidence hierarchies or classifications.

Table 1.1: Hierarchy of The Strength of Evidence

I	Strong evidence from at least one systematic review of multiple well-designed randomised controlled trials.
II	Strong evidence from at least one properly designed randomised controlled trial of appropriate size.
III	Evidence from well-designed trials without randomisation, single group pre-post cohort, time series or matched case controlled studies.
IV	Evidence from non-experimental studies from more than one centre or research group.
V	Opinions of respected authorities, based on clinical evidence, descriptive studies or reports from expert committees

(Moore, McQuay and Gray 1995:1)

Numerous "hierarchies" of evidence have been published similar to the one in Table 1.1 (Petticrew and Roberts 2003). Examination of the methodologies associated with such hierarchies reveals a strong association with positivist or quantitative research approaches rooted in the empirico-analytical paradigm. The top of the hierarchy denotes the most valid source of evidence that includes systematic reviews and robustly designed RCTs. Working down the hierarchy there are less valid sources of evidence noted by the fact that in each the internal validity (ability to control bias) is lower than in the one above. Opinion, category V, is the least valid form of evidence and used if other forms of evidence are not available. In fact although opinions were considered in early hierarchies, the last three levels are now not recommended to inform practice (Mantzoukas 2008, Morse 2006). In later and more refined versions of the hierarchy expert opinion

was removed and further methodological approaches were added to increase the internal validity of the hierarchy of evidence (Booth 2010, La Caze 2009) and an example is detailed below:

N-of-1 randomized controlled trial
Systematic review of randomized trials.
Single randomized trial
Systematic review of observational studies
Single observational study
Physiologic studies
Unsystematic clinical observation

(Guyatt and Drummond 2002)

There are numerous reasons for adopting empirically based evidence in the decision making process. The legacy associated with the evidence based medicine movement, and one of its central tenets, recognises that the use of such hierarchies is logical and deductive, and, importantly, seeks to avoid the practice of health care based on the unsubstantiated experience of “experts”. Thus, ontologically, the importance and use of a graded knowledge system, such as hierarchies of evidence, reflects the objective truth in health care (Djulbegovic, Morris and Lyman 2000). This objective truth is important, politically and economically, for health care practice. The theory behind the use of ranked evidence is simple and sound in that the best way to determine the effects of an intervention, in terms of clinical and cost effectiveness, is to remove bias from health care intervention. The notion of RCTs, and other associated methodologies grounded in positivism, achieves this and perpetuates the importance of objectivity in the evidence based decision making process (Djulbegovic, Morris and Lyman 2000). Subsequently other forms of knowledge or evidence, which sit outside of the empirico-analytical paradigm, are rejected because of *“their inscrutability to objective evaluation”* (Ashcroft 2004:132).

To some extent the profession of physiotherapy has adopted and accepted this approach without any real critical reflection on its value. Hierarchies of evidence have been used to explain policies, treatment effectiveness and cost effectiveness of interventions at a micro, meso and macro level within the profession of

physiotherapy (Swinkels et al. 2002). Fergusson and Day (2005) emphasise the need for an EBP approach in a cost conscious health care system and practitioners must be able to rationalise treatment decisions with credible sources of evidence. The use of clinical research that is deemed to be valid, as defined by such hierarchies, achieves this proposition. The development of evidence based databases, journals and reviews further reinforces the notion that hierarchies of evidence, based firmly with in an empirico-analytical paradigm, and the ubiquitous use of RCTs, are the most valid sources of evidence. Thus, the critical understanding and use of valid research (that has grounding in the epistemology and ontology of positivism, as described and operationalised in hierarchies of evidence) are highly valued in physiotherapy (Bithell 2005) and would seem to be the predominant feature in the practice and execution of EBP. Currently how this approach is adopted into clinical practice, how physiotherapists use such hierarchies of evidence and how systematic reviews and RCTs are used in the clinical decision making process is not known and forms the basis for this thesis. Importantly, how the empirico-analytical paradigm is incorporated into the five step model and how physiotherapists consciously apply this into practice requires further investigation.

Alternative Evidence Based Practice Paradigms

A Casuistic Model

The problem with using evidence, based in the empirico-analytical paradigm, is that, the linear structure of evidence hierarchies and use of “quantitative based” research does not reflect the reality of clinical life. Clinical practice in physiotherapy is complex and uncertain in contrast to that of well-designed and executed RCTs and systematic reviews (Gibson and Martin 2003). Antagonists of the EBP movement have argued that findings from such research trials are not directly generalisable to individual patients because of the diverse characteristics and unique nature of patients (Mantzoukas and Watkinson 2008). From an ontological perspective the notion of multiple realties of patient care does not seem to be represented within the empirico-analytical paradigm. This is reflected in the hierarchy of evidence; as Avis and Freshwater (2006) point out, the most alarming feature of such hierarchies is the complete disregard for qualitative evidence and the use of clinical and patient experience. EBP, underpinned by the empirico-analytical paradigm, seems to support and perpetuate a biomedical

approach to health, an approach that has a defined set of beliefs including and not limited to the following:

- Health is the absence of disease.
- Mental phenomena are separate from and unrelated to other disturbances of bodily function.
- The patient is a victim of circumstance with little or no responsibility for the presence or cause of the illness.
- The patient is a passive recipient of treatment, although cooperation with treatment is expected.

(Wade 2004:1398)

Subsequently the relationship between the empirico-analytical paradigm and biomedical approach to health care seems to be at odds with the EBP tenet that the patient and clinician should be involved in the decision making process. Tonelli (2006) expands this notion and explains that population studies (RCTs and the like) are limited in application to that of individual patients; in fact, EBP has promoted wholesale epidemiological solutions to clinical problems while paying lip service to the needs of the individual patient (Miles 2007). Proponents of EBP have recognised this dilemma and have called for the integration of alternate types of medical knowledge as well as patient goals and values into the clinical decision making process (Greenhalgh 2014).

Authors interested in the application of medical knowledge explain that within the empirico-analytical paradigm sources of knowledge and information include clinical and biological research in the form of controlled experiments, randomised controlled studies, observational and correlation designs (as identified in evidence hierarchies), but importantly also include biological and patho-physiological theory which are areas of knowledge often not represented in the EBP approach (Ashcroft 2004, Tonelli 2006).

Tonelli (2006) proposes an alternative structure (Table 1.2) to that previously described which while embracing a wider use of knowledge and clinical knowing is still based within the empirico-analytical paradigm. Tonelli (2006) rejects the traditional hierarchy of evidence and the stepwise application of evidence into practice and espouses a more pragmatic approach to using and choosing evidence. He recognises that sources of empirically based knowledge should be

used when applying evidence into practice. Tonelli (2006) also argues that practitioners must consider experiential knowledge, an understanding of patho-physiological rationale, the goals and values of the patient, and the constraints associated with the health care system when making clinical decisions. He explains that the decision making process should not be conceptualised as a stepwise application of evidence but should be casuistic, that is, case based. From this perspective evidence is not seen as a hierarchy but as a system in which clinicians choose and justify the appropriate type of evidence depending on the needs of the patient or the case in hand. With this approach empirical evidence is no more important than clinical experience or patho-physiological understanding; instead the relative weight of each of these areas is determined by the needs of the patient. Table 1.2 outlines the five topics of clinical decision making, not as a hierarchy but a set of principles to use in making choices based on the needs of the patient.

Table 1.2: Five Topics of Clinical Decision Making

Empirical evidence: derived from clinical research.
Experiential evidence: derived from clinical experience or the clinical experience of others.
Pathophysiologic rationale: based on underlying theories of physiology and disease of healing.
Patient values and preferences: derived from personal interaction with individual patients.
System features: including resource availability, societal and professional values, legal and cultural concerns.

Tonelli's (2006:253) casuistic model is a significant departure from the traditional EBP approach but it is still grounded in the empirical analytical paradigm; for example, clinical research is still deemed to be that of published work that demonstrates "statistical robustness". Even the description of experiential evidence has a positivist undertone of which the highest level is considered to be that of experts with experience of "large numbers" of patients. Patho-physiological evidence also sits in the empirical analytical paradigm in that evidence in this category is primarily concerned with "*the strength of underpinning biological or physiological theory associated with traditional empirically based sciences*" (Tonelli 2006:256).

This approach, however, is a significant shift from the traditional positivist approach to EBP in that alternative forms of evidence are considered. Interestingly, in this approach, the application of the evidence lies squarely at the feet of the clinician who decides how to apply the evidence in specific circumstances, an approach that lends itself to the philosophy of pragmatism. A further issue is apparent with Tonelli's (2006) framework: notably it does not describe in detail how patient values and goals should be incorporated into the decision making process. He states that patient values should be "considered" in the process but no other detail on how to attain this is described. Thus, his model recognises the importance of patient involvement in EBP but patient contribution seems to sit at the periphery of clinical decision making process perpetuating the biomedical approach to health care. Tonelli's (2006) espoused approach is very much an ideal; it is not based on empirical research or observation; practitioners, including physiotherapists, might adopt a casuistic approach and may take each case on an individual patient basis but currently this is not known. Therefore, research is required to investigate if physiotherapists use such a pragmatic approach and to investigate why. Identifying how evidence is utilised in practice will begin to give insight into the knowledge paradigms that physiotherapists prefer.

The Interpretive Paradigm and Qualitative Evidence

Despite Tonelli's (2006) attempt to widen the evidence base his model does not have a coherent epistemological foundation. Although wider sources of knowledge are considered (e.g. clinical knowledge and biological plausibility) other forms of clinical research, such as qualitative research and methods akin to a patient centred approach to health care, do not contribute to his model. There are numerous philosophical issues with the notion that clinical decision making should be solely framed within an empirico-analytical paradigm; Jones et al. (2006:2) cite Cox (1999) and summarise the difficulty with applying research into practice:

"*[The] Scientific method focuses on one variable at a time across a hundred identical subjects to extract a single generalisable truth. …Clinical practice deals with a hundred variables at a time with one subject…in order to optimise a mix of outcomes intended to satisfy the particular (subject's) current needs or desires.*"

Baxter (2003:3) in his editorial “The End of Evidence Based Practice” implied that physiotherapists are becoming tired of EBP for numerous reasons. First, and not least, evidence in the physiotherapy community is often deemed to be of poor quality and further research is always required to illuminate if treatments are effective or not. Second, the ubiquitous nature of randomised controlled trials, which are purported to be the gold standard in determining clinical effectiveness, is not always suitable for the complex and multifaceted world of physiotherapy. Briggs (2005) identified with this and made the point that clinical evidence in the form of randomised controlled trials cannot account for a range of patient sensitivities, perceptions and expectations. Although RCTs are effective in establishing if one treatment is more effective than another the applicability of the findings are often deemed to be limited. Such research is interested in an “average effect” in relation to the general population and does not explain why treatment effects and differences between treatments occur (Greenhalgh 2014). Authors contend that RCTs do not account for the unique and individual needs of patients; patients are not average: they have their own unique set of attributes that the results of RCTs may not be able to account for (Grypdonck 2006). Mantzoukas (2008) agrees and explains that individual patient requirements are specific and embedded within a unique context: it must follow that health care itself, and effective treatment interventions, must also be unique and specific to that of the patient. The issue with empirico-analytical approaches to clinical decision making is that the results are de-contextualised and homogenised so that they can be applied to the general population; in this world view of EBP patient aims and goals are identical and are framed within acontextual situations.

The World Confederation of Physical Therapy identified that physiotherapy is a process that seeks to enable individuals with impairments, activity limitations and participation restrictions to reach their optimal physical or social functional level through partnership with family, providers and the community (Gibson and Martin 2003). This description acknowledges that physiotherapists should address biological impairments along with improving overall physical function and this should take place within a social context (Gibson and Martin 2003, Jones et al. 2006). From an EBP perspective this recognises that health care intervention and behaviour is complex and multifaceted requiring evidence from multiple perspectives and not just within the empirico-analytical paradigm. Other paradigms that generate knowledge and understandings also need to be considered and it is

within the interpretive paradigm that knowledge is determined by its value to the individual and subsequently embraces an ontological position different to that of the empirico-analytical paradigm (Higgs and Titchen 1995).

Qualitative research is associated with the interpretive paradigm and is concerned with describing and explaining complex social phenomena that occur in “natural settings” and enables understandings towards health and health care behaviour (Gibson and Martin 2003). Jones et al. (2006) explain that the qualitative or interpretive paradigm operates under the assumption that truth and reality are multiple and not absolute, the reality of health and health care is constructed by individuals through their experiences and these experiences are contextually unique. Evidence derived from such research makes known the patient’s perspective of disease as well as their experiences of health care (Broeder and Donze 2010), subsequently evidence derived from qualitative research enables practitioners, including physiotherapists, to authentically listen to the patient’s “voice”. Idealistically, once in the public domain qualitative research brings patients’ experiences to the forefront of health care and to the attention of health care professionals with the hope of informing or changing practice (Grypdonck 2006).

It would seem sensible that EBP frameworks should incorporate evidence that describes and promotes in depth understandings of the experiences, beliefs and motivations that underpin health care behaviour and how society and culture influence such behaviour. This is true for physiotherapy where the focus of care often goes beyond the “biomedical” model and should consider the “person” within an individual and social context (Gibson and Martin 2003). Gibson and Martin (2003) and Broeder and Donze (2010) identified that qualitative research is not a method but an umbrella term made up of different research approaches, which differ not so much in their methods (such as data collection and sampling) but in the philosophical and theoretical underpinnings that guide the research process. There are many theoretical traditions associated with qualitative research and each has a different focus (Creswell 1998, Creswell 2003). Gibson and Martin (2003) suggest that qualitative research can give different types of evidence, which include: qualitative derived theory; qualitative derived meanings of experiences; qualitative derived cultural understandings; and qualitative derived understandings of communication. Each of these is associated with a particular

theoretical tradition: grounded theory; phenomenology; ethnography; and discourse analysis respectively. They identified that developing an understanding of qualitative research will provide the means to address the multiple realities and complex health requirements for patients, a perspective that the empirico-analytical paradigm does not consider. Gibson and Martin's (2003) description of qualitative research begins to give a framework for how it could be utilised in practice: for example, to inform theory, to understand the culture of health care or to illuminate patient experiences. However, to enable clarity for the reader, their classification is reductionist and artificially narrows the concept of qualitative research; subsequently the complexity of such approaches is not fully explored.

Similar to protagonists that espouse the underpinning of evidence hierarchies with quantitative research, authors that write about the use of qualitative research have also attempted to describe evidence classifications. Fundamentally, evidence hierarchies are structures that enable health care practitioners to consider the value and worth of evidence as a precursor for clinical decision making. Within the interpretive paradigm authors have attempted to describe hierarchies in a bid to enable practitioners to utilise qualitative research (Salmond 2007, Tomlin and Borgetto 2011). The adoption of such classifications is still being discussed, debated and developed (Britten 2010, Daly et al. 2007, Tomlin and Borgetto 2011).

Initially, qualitative research had no place in the traditional hierarchy of evidence such as those described in Table 1.1 (Scheer, Arbesman and Lieberman 2008). In fact Jones et al. (2006:3) stated, somewhat boldly, that "*the contribution made by qualitative research to understanding patient perspectives and clinical expertise is currently excluded from all evidence hierarchies*". Jones et al.'s (2006) initial assumption was however not strictly true; Petticrew and Roberts (2003) in their article debating the value of evidence hierarchies acknowledged the value of qualitative research and presented an evidence typology that included different types of research evidence. In this typology different research types, including qualitative research, are cross referenced to a set of parameters that outline their appropriateness and usefulness (Table 1.3). The table presents the reader with a series of research questions and a set of methodologies that can be used to help select appropriate research types and embrace the notion of methodological pluralism.

Table 1.3: Example of an Evidence Typology (Reproduced by kind permission from The BMJ Publishing Group (Appendix I))

Research question	Qualitative research	Survey	Case-control studies	Cohort studies	RCTs	Quasi-experimental studies	Non experimental evaluations	Systematic reviews
Effectiveness Does this work? Does doing this work better than doing that?				+	++	+		+++
Process of service delivery How does it work?	++	+					+	+++
Salience Does it matter?	++	++						+++
Safety Will it do more good than harm?	+		+	+	++	+	+	+++
Acceptability Will children/parents be willing to or want to take up the service offered?	++	+			+	+	+	+++
Cost effectiveness Is it worth buying this service?					++			+++
Appropriateness Is this the right service for these children?	++	++						++
Satisfaction with the service Are users, providers, and other stakeholders satisfied with the service?	++	++	+	+				+

As the evidence based practice movement evolved so did the development of evidence classifications and despite Petticrew and Roberts' (2003) discussion on the value of qualitative research other attempts to integrate qualitative research resulted in such studies being consigned to the bottom of the hierarchy. Melnyk and Fineout-Overholt (2011) described a seven level hierarchy with systematic reviews and meta-analysis at level 1 and qualitative research at level 6, one step up from expert opinion. Tomlin and Borgetto (2011) explained that the relegation of qualitative studies was based on the perception that they lacked statistical power and did not meet the internal validity rigours compared with experimental studies. Subsequently, attempts to integrate qualitative research were criticised and rejected, not least, because the philosophical principles that underpin both the interpretive and empirico-analytical paradigms were too different (Daly et al. 2007). As Grypdonck (2006) discussed, evidence derived from qualitative studies answers questions that relate to "meaningfulness" of health care intervention and not "effectiveness".

Further discussion and debate about the value of qualitative research hierarchies ensued (Jones et al. 2006) and subsequently qualitative evidence hierarchies have been proposed. However, unlike the empirico-analytical paradigm, where evidence hierarchies are reasonably stable in construct and accepted, qualitative hierarchies have yet to be agreed. Mays et al. (2001) and Dixon–Woods et al.

(2004) argue that the epistemological diversity [within the interpretive paradigm] renders any single hierarchy of evidence inappropriate for qualitative research. For example, phenomenology can be classified as a philosophy, methodology and method that seek to uncover the meanings of lived experiences (Mapp 2008). However there is no one accepted phenomenological approach; there are different schools of phenomenology, each having a distinct set of philosophical principles (Caelli 2000). To compound this there are other theoretical qualitative traditions, such as Grounded Theory, that have their own internal debates and discussions resulting in different approaches. It stands to reason, therefore, that due to the diverse nature of the qualitative research paradigm it is difficult if not impossible to have a singular evidence hierarchy, a conclusion that the NHS Health Development Agency draws from its review on integrating quantitative and qualitative evidence (Dixon–Woods et al. 2004).

Despite the above methodological issues with attempting to create a “one glove fits all” hierarchy, authors have attempted to develop evidence classifications. Instead of constructing a hierarchy based on theoretical traditions, qualitative research is ordered in terms of its rigour and methods that achieve truth and trustworthiness. Tomlin and Borgetto (2011) described a four tier classification based on methodological strength as follows:

1. Meta-synthesis of related qualitative studies.
2. Group qualitative studies with more rigour (A, B, C).
3. Group qualitative studies with less rigour (A, B, C).
4. Qualitative studies with a single informant.

In this approach Tomlin and Borgetto (2011) see rigour as:

A. Prolonged engagement with participants.
B. Triangulation of data (from multiple sources).
C. Confirmation of data analysis and interpretation (Peer and member checking).

In this hierarchy better quality studies would contain all three of the described components whereas lower grade studies would have one or perhaps no elements of rigour. Similar evidence hierarchies have also been proposed to the one above that are not bound by theoretical qualitative traditions but are classified in terms of methodological rigour (Daly et al. 2007).

Despite the importance of integrating qualitative evidence into evidence based practice, how this is achieved remains unknown and to date there is limited physiotherapy research that considers how this may be achieved. Grypdonck (2006) identified that qualitative research can be used in numerous ways and described the purpose and value of qualitative research but not how it can be applied in clinical practice. For example, Grypdonck (2006) contends that qualitative research: illuminates the patient experience; supports the findings from RCTs; contextualises health care behaviour in relation to treatment effectiveness and can provide an understanding of processes such as adherence to, or self-management of a therapeutic regimen, and thus provide the foundation for developing interventions that address the factors that are at play in these situations. Qualitative research has the potential to add important dimensions to health care intervention including difficulties associated with care management, complying with the intervention and understanding attrition. However, despite attempts to integrate qualitative research into the evidence based paradigm it is not known if and how physiotherapists adopt such evidence into practice. Examining such practices will add to the current EBP theoretical frameworks and potentially lead to further educational understandings and developments.

Pragmatism: An Evolving EBP Paradigm

The Joanna Briggs Institute (JBI) recognised the need for considering all types of evidence and knowledge and conceptualised EBP into a model that was inclusive of diverse sources of research based and non-research based evidence. Although not stated, the model is firmly grounded in pragmatism, a philosophy that attends to the practical nature of reality (Shaw, Connelly and Zecevic 2010). This paradigm rejects the rigidness of the empirical-analytical and interpretive paradigms and is more concerned with the plurality of truth: all sources of knowledge are deemed important depending on the truth that is required (Shaw et al. 2010). The pragmatic paradigm places “the research problem” as central and applies all approaches to understanding the problem (Creswell 2003:11). Within an EBP context clinical issues become the ‘central’ focus, and evidence is selected to provide insights into the clinical issue with no “philosophical loyalty to any alternative paradigm” (Mackenzie 2006:194).

The profession of physiotherapy aligns theoretically with both quantitative and qualitative research methodologies which together provide substantive support for

clinical reasoning and decision making; consequently an EBP approach that is pragmatic could reconcile the issues related to the two competing paradigms of positivism and interpretivism.

The JBI model of evidence based practice accepts the notion of pragmatism and argues that diverse sources of research based and non-research based evidence should be considered and places the practice of EBP in a broader and perhaps global context (Pearson et al. 2005, Pearson et al. 2007). The model conceptualises EBP as a clinical decision making process "*that considers best available evidence, the context in which care is delivered, client preference and the professional judgement of the health care professional*" (Pearson et al. 2005:209).

Four major components are considered in this model (Figure 1.1):

1. Health care evidence generation
2. Evidence synthesis
3. Transfer of evidence
4. Evidence utilisation

Health care evidence generation is the first step in applying evidence into practice, evidence is not seen as hierarchical or belonging to a particular paradigm; rather it is seen as something that substantiates or confirms "truth" or "validity". Types of evidence include research, experience or discourse (with colleagues or patients). The important point in this model is that evidence is not characterised by its relationship to a particular paradigm but simply if the source of evidence is "**feasible (F*)**" (practical within the health care context); whether evidence is "**appropriate (A*)**" (fits to a particular situation); whether evidence is "**meaningful (M*)**" (relating to the personal experiences and opinions and beliefs of the patient); and whether it is "**effective (E*)"** (evidence demonstrates relationships between health care intervention and measured outcomes). Each source of evidence selected need not fit all of the FAME* criteria but be chosen "judiciously" in order to meet specific heath care requirements (Pearson et al. 2005:209).

Figure 1.1: The JBI Conceptual Model of Evidence Based Health Care
(Reproduced by kind permission from Blackwell Publishing (Appendix I))

The second step in this model, **evidence synthesis**, acknowledges that diverse forms of evidence in the form of research, experience (either from the clinician or the patient) or opinion should be subjected to critical analysis. Then, relevant information and / or data, either numerical or text based (an approach that recognises the importance of combining qualitative and quantitative research), can be extracted and packaged ready for use. Extracted data, preferably from multiple sources, can then be synthesised into a cogent argument, for application into practice, operationalised through a process of systematic review. Pearson et al. (2005) use the term systematic review in a generic sense and, significantly, do not readily differentiate between qualitative and quantitative reviews of research; nonetheless they do suggest that evidence from research can be summarised both qualitatively and quantitatively and each will, to a greater or lesser extent, be "**feasible, appropriate, meaningful and effective**" depending on the health care question being addressed.

Pearson et al. (2005) also acknowledge the importance of expert opinion as a form of evidence which also needs to be appraised, extracted and summarised. However, opinion is ambiguously described and there is little detail as to what opinion is, other than evidence that arises from statements, books, journals, reports or guidelines that focuses on a particular health care issue. If the source of opinion is regarded as authoritative then it is deemed to be acceptable in this model. Critical appraisal and synthesising evidence from opinion or experience is not adequately discussed or described by Pearson et al.'s (2005) paper and comes across as an ideal rather than a definitive process.

The third stage in this model recognises that once evidence has been pre-packed knowledge needs to be transferred to health professionals and the organisational systems in which they practise. The **transfer of evidence** component in this model is seen as a process whereby knowledge is targeted towards a specific audience and information is packaged into actionable messages. Delivering or transferring "messages" is seen to occur in three ways: "education and training; information delivery (using information technology, print material and meetings); and through organisational and team systems" (Pearson et al. 2005:213).

The final component in the model is **evidence utilisation** which Pearson et al. (2005) describe as evidence used as a process that is grounded in change management and organisational systems theory. Making change in health care systems is a complex process and is influenced by patients' needs, health care professionals' knowledge and practice experiences and organisational factors which may act as drivers or barriers to clinical decision making. Thus, evidence utilisation is seen as a process that targets and evaluates change using approaches grounded in management theory. Pearson et al. (2005) recognise the importance of organisational culture and, to some extent, explain that practitioners' ability to transfer and use evidence in health care settings is bound, driven and hindered by the organisational milieu in which they practice.

This model has numerous interesting features: it attempts to bring together numerous sources of relevant evidence into the decision making process; it describes the flow of information to the patient and acknowledges that there are steps to follow; and it recognises the complexity of applying evidence against the idiosyncratic background of different organisational cultures. In part, the model achieves a reasonable working pragmatic framework and seems to fit with the

practice philosophy of physiotherapy compared with the stand alone empirico-analytical and interpretive frameworks of practice. The model is, however, complex and, on occasion, lacks the depth and detail needed to resolve some of its inherent ambiguities. The model is also theoretical with little or no empirically based support. It suggests a guide for practice but, as with all of the EBP theoretical frameworks, it is not known if physiotherapists adopt this model consciously or tacitly in clinical practice and requires further evaluation relating to its practicality. This opinion is summarised by Eccles et al. (2005:111) who suggest that: "*our current level of knowledge and experience of the application of theory in implementation research is limited*". Pearson et al. (2005:214) recognise this limitation in the development of the JBI model and state that "*there is little useful evidence on effective implementation strategies arguing for the development and use of theory based frameworks in evaluating strategies to implement research findings*". They go on to say that, although implementing research can lead to an improvement in care, few studies have investigated the rationale that underpins the decision making process. In short it is not known how EBP is practised!

The Relationship between EBP, Practice and Education

Despite the fact that EBP theoretical frameworks are still developing and evolving, the Sicily Statement on the development of EBP (Dawes et al. 2005) made numerous recommendations relating to the teaching and practice of EBP. One recommendation highlighted the need for future research to evaluate the effectiveness of education programmes, the premise being that if EBP is taught effectively then this will impact on how it is practised (Lewis, Williams and Olds 2011). Researchers have therefore attempted to evaluate the effectiveness of education and training programmes, in relation to the constructs of the definition of EBP and the five step model, as a way of demonstrating effective adoption of EBP into practice. Interestingly, no physiotherapy research to date has explored how research and practice paradigms, as described above, influence the application of EBP. Most studies are simply interested if education changes knowledge, skill and behaviour in relation to its method.

Coomarasamy, Taylor and Khan (2003) developed this premise and identified that for the successful practice of EBP clinicians need to acquire specific skills and competencies in four important domains of practice:

- **Knowledge**: the process of remembering and grasping the meaning of EBP principles.
- **Skill**: the accurate application of EBP knowledge.
- **Attitude**: the spontaneous acknowledgement for the need to use EBP knowledge or skill in practice.
- **Behaviour**: the application and use of EBP knowledge and skills to solve an issue in practice.

Importantly these domains needed to be developed in relation to the five step model of EBP; thus, knowledge, skills, behaviours and attitudes need to be developed in relation to "asking, acquiring, appraising, applying and assessing" as previously discussed at the start of this review (Coomarasamy, Taylor and Khan 2003, Shaneyfelt et al. 2006a, Taylor et al. 2000, Taylor et al. 2004)

Coomarasamy, Taylor and Khan (2003) conducted a systematic review of randomised and non-randomised controlled trials to evaluate the effects of standalone versus clinically integrated teaching in evidence based medicine on various outcomes in postgraduates. Based on their analysis of 23 studies they concluded that standalone teaching improved knowledge but not skills, attitudes, or behaviour; in contrast clinically integrated teaching of EBP improved knowledge, skills, attitudes, and behaviour. In general, this was a satisfactory systematic review with a clearly focused research question, and clear strategies were used to reduce selection and publication bias (Akobeng 2005). Important medical databases were searched to obtain relevant literature although "grey literature" and non-English publications were not considered in this review (Dubben and Beck-Bornholdt 2005). Coomarasamy, Taylor and Khan's (2003), however, did not use validated quality assessment tools to establish the methodological quality of the included studies and the studies that were included were deemed to be of mediocre to poor quality. Both of these factors make it probable that inappropriate conclusions could have been drawn from these studies.

Despite the possibility of systematic error in Coomarasamy, Taylor and Khan's (2003) review, Schreiber et al. (2009) drew similar conclusions and explained that the profession of physiotherapy embraced the notion of EBP but there was little evidence to show that evidence, research and clinical guidelines changed clinical decision making behaviour. Schreiber et al. (2009) used a mixed methods

approach to identify if an EBP teaching programme resulted in improvements in physiotherapists' use of research to inform clinical decision making. They developed a one day (five hour) evidence based practice workshop aimed to develop skills in clinical question formation, database searching and critical appraisal. Twenty one participants completed a survey (Likert Scale) on beliefs and attitudes towards the use of research before the workshop and six months afterwards. As part of the mixed methods approach participants were also interviewed using methods associated with qualitative research and four themes emerged that were synthesised with the findings from the Likert questionnaire. Schreiber et al. (2009) concluded that participants indicated a positive attitude towards EBP but reported, at six months, only a modest use of research in the clinical decision making process. In fact, participants relied more on traditional approaches to decision making such as the use of previous education, prior experience and peer suggestion over that of research, corroborating other research that has investigated the use of EBP in clinical practice (Bohannon 1990). For educationalists and proponents of EBP this is somewhat of a concern; if teaching does not affect behaviour (the application into practice) then potentially it has no value.

Schreiber et al.'s (2009) study was executed reasonably well: a validated questionnaire was used to enhance the reliability and validity of the quantitative data and methods to enhance rigour were used to establish the credibility and trustworthiness of qualitative data. For example, data triangulation, the use of two data coders as well as maintaining an audit trail was used in the qualitative component of this study. However, despite the execution of this study the fact remains that a five hour teaching programme may not have been enough for the participants to internalise their knowledge of EBP and subsequently change behaviour, and raises questions about the appropriateness and transferability of Schreiber et al.'s (2009) study.

Although issues can be easily identified in the above studies earlier reviews that investigated the effectiveness of EBP education programmes also drew similar conclusions. In their systematic review Taylor et al. (2000) looked at the effectiveness of critical appraisal workshops and identified that knowledge improved with education but surprisingly there was little or no effect on skill acquisition, changes in attitudes or changes in behaviour, again a somewhat

concerning point for protagonists of EBP. At the time of this review the methodological quality of the available studies was low and only one randomised controlled trial was sourced. The authors questioned the validity and worth of current EBP education interventions but identified two important limitations within their study. First, research at the time was limited in scope and, methodologically, was of poor quality. Second, validated outcome measures had not been sufficiently developed, making it difficult to establish the overall effect and impact of teaching programmes on EBP knowledge, skills, attitudes and behaviours.

The fundamental problem with research studies that investigate education and practice revolves around the notion that knowledge, skill and behaviour domains of EBP can be measured. Shaneyfelt et al. (2006) conducted a systematic review that aimed to appraise available EBP teaching evaluation instruments. They identified that only seven out of the one hundred and four outcome measures that evaluate the effects of education on practice were deemed to be reliable in terms of their psychometric properties. Only two of these, the FRESNO test and BERLIN questionnaire, were deemed to be of high quality. The conclusion that education and training programmes only affect the domain of knowledge with little change in skill acquisition therefore needs to be questioned. Interestingly most of the outcome measures, as described in Shaneyfelt et al.'s (2006) review, were developed to measure specific educational programmes. For example, the FRESNO test was designed to evaluate the learning outcomes for a specific evidence based medicine family practice residency programme at the University of California; the external validity of this test, and the ability to generalise findings to other education contexts, may not be appropriate. Even if the outcome measures were deemed to be reliable and valid the heterogeneity of the education programmes described means that developing a "one glove that fits all" method of evaluation would be very difficult. Lewis et al. (2011:11) identify with this and explain that the design of education programmes and associated outcome measures have "*been developed to assess changes in knowledge and skill rather than the actual performance of EBP in practice*". The relationship between education and practice, as yet, has not been clearly established and one reason for this may include the inability to reliably and accurately measure the effects of education programmes and reliably and accurately measure the practice of EBP; thus other methods of investigation that sit outside of quantitative methodologies need to be considered. No studies to date have investigated the influence and

impact that underpinning and often assumed theoretical frameworks have on evidence based practice. Thus, it still remains unclear as to how and whether EBP is practised by physiotherapists in the clinical arena.

To summarise, evidence based practice is based on the assumption that research knowledge or theory can simply be applied in practice. However, physiotherapy research to date has not investigated how physiotherapists select evidence. Little is known about how underpinning paradigms of practice influence that selection and little is known about how physiotherapists internalise their knowledge of EBP and then translate “evidence” into clinical practice. Furthermore, EBP takes place within a clinical and organisational context and the decision making processes, as described above, need to be considered within the constraints of the organisational culture in which physiotherapists work. Research that explores the conscious and tacit experiences of physiotherapists will give insight as to how theoretical and practice frameworks influence this decision making process and will subsequently inform the development of future education programmes; this will be discussed in the next chapter.

Chapter 2: Research Methodology, Design and Methods

Introduction

The purpose of this chapter is to describe, explain and justify the research approach used in my study. In this section I will outline how I created my research aim and objectives and discuss the philosophical stance, methodology and design for this project. This chapter will also justify my preferred research approach, phenomenology, an approach inspired by the ideas presented by Edmund Husserl (1931, 1982).

The development of my research question has been a complex process. EBP has become an important part of my career and academic interest for nearly 20 years and latterly I have been involved with designing and teaching undergraduate and postgraduate programmes of study. I first started teaching EBP in 2001 to a set of undergraduate students at Coventry University; I designed, along with my colleagues, a programme of study that aimed to enable students to develop EBP knowledge, skills and behaviours. Initially, through my observations of teaching, practising and observing EBP and reflecting on my experiences as a physiotherapist and educator, I asked myself the question, “Do physiotherapists practise EBP?” Further thought led to refining my idea a little more, “Do they practise EBP after receiving education and if so how?” And then, “If physiotherapists don’t practise EBP, why not?” These embryonic questions were based on my assumptions that EBP represents an important component of clinical practice and should be part of the clinical decision making process. But is this the case?

My overarching research idea aimed to understand how physiotherapists applied this body of knowledge. Very little is known about how physiotherapists’ knowledge, skills and behaviours are translated into clinical practice and how their beliefs about EBP influence and affect the clinical decision making process. Seeking to understand how EBP is applied by physiotherapists represents a unique area of study and has the potential to inform the development of education programmes. The following section describes the evolution of my research idea and explains how my deepening understanding of EBP and research philosophy influenced the development of my research study.

To help develop my research aim and objectives and to justify my study approach I critically reviewed my research idea from different philosophical perspectives. Racher and Robinson (2003:467) and Guba and Lincoln (1994) suggest that the basic philosophical assumptions that define research paradigms can be summarised from the response to three fundamental and sequential questions:

a. The ontological question: What is the form and nature of reality and what can be known about it?

b. The epistemological question: What is the nature of the relationship between the knower and what can be known?

c. The methodological question: How can the inquirer go about finding out whatever he or she believes can be known?

I subjected my research idea to the above questions to justify my research approach and to help structure my aims and objectives. As Crotty (1998), Sim and Wright (2000) and Crossan (2003) suggest, it is essential to consider the theoretical and philosophical basis for different approaches to research and to develop a critical understanding of the research process; this in turn enables researchers to make informed choices relating to the method and design of a study.

Philosophical Rationale for the Selection of Qualitative Research

Using Guba and Lincoln's (1994:108) three question criteria I subjected my research idea to the ontological, epistemological and methodological assumptions associated with qualitative and quantitative research. I critically reflected on my understandings of EBP, research philosophy and design and identified that my research idea did not intend to control or predict variables but aimed to describe and understand physiotherapists' perspectives of EBP. Ontologically, the reality of experiencing EBP would be different for each person; participants in this study would have different educational and professional experiences and would have a set of unique beliefs and perspectives about EBP. Epistemologically, each participant would have developed individual meanings and understandings related to EBP by virtue of their unique experiences in practice (inter-relationship with patients, colleagues and the cultural milieu in which they work) (Crotty 1998:43). Using Guba and Lincoln's (1994:108) first two questions as a lens to examine and justify the underpinning research position, my research idea seemed to fit within

the interpretive paradigm aligned with the notion that individual experiences of EBP are unique (ontological) and that understandings about EBP are aligned with experience, social interaction and complex "human" inter-relationships (epistemological). The proposed research idea aligned with the interpretive paradigm and qualitative research but Guba and Lincoln's (1994) third question needed to be considered to identify an appropriate methodology.

Methodological Selection

To help select an appropriate methodology to answer my research idea, Creswell (1998) and Holloway's (2008) rationale for selecting qualitative research was considered. They suggested that if the research idea/question looks at "**how or what**" with an intention to "**describe**" what is going on then consider using qualitative methods; choose qualitative methods if there is an intention to "**explore**" participant behaviour, especially if theory that describes such behaviour is absent or incomplete; choose qualitative methods if there is a need to present a "**detailed view of a phenomenon"**; and finally, if individuals are to be studied in their "**natural setting"** then strong rationale exists for using a method grounded in qualitative research. Reflections on the above had the effect of enabling me to justify the choice of qualitative research as well as enabling me to structure my research aim and objective. The research idea evolved into the following aim and objective and confirmed that methods associated with qualitative research and the interpretive paradigm was appropriate.

*"The aim of this study is to gain **in depth understanding** of **how** physiotherapists apply EBP in the **real and complex world** of clinical practice. This will be achieved by **exploring** physiotherapist accounts of their "experiences" to generate a rich description of the practice of EBP."*

Phenomenology: Rationale and Choice of Methodology

The above rationale enabled me to reconcile my choice of qualitative research but Guba and Lincoln's (1994) third question had only been partly answered: an appropriate methodology had not yet been considered. The starting point for choosing an appropriate qualitative methodology emerged from analysing my research aim and objective. I recognised that to develop an in depth understanding of how EBP is practised an approach was required that explored and described physiotherapists' experiences. This reflection directed me towards

the use of descriptive phenomenology as the underpinning philosophy and methodology. As Mapp (2008:308) suggests, the starting point for selecting phenomenology is recognising that it aims to "*... fully describe a person's lived experience of an event or experience.*"

Phenomenology is complex: it is philosophical movement, a way of thinking, a methodology and a method. There are different phenomenological schools of thought inspired and influenced by key thinkers such as, Brantano, Husserl, Heidegger and Merleau-Ponty (Streubert-Speziale and Carpenter 2007). Such philosophers have different interpretations of phenomenology and subsequently there is more than one approach to legitimately undertake a phenomenological study. Caelli (2000) identified eighteen different forms, each sharing fundamental principles, but each having a distinct philosophical and methodological interpretation. I was inspired by my reading of the works of Edmund Husserl (1931, 1982) one of the founding fathers of phenomenology.

Husserl's phenomenology can be thought of as a science that aims to describe particular phenomena (or the appearance of things) as lived experience and is portrayed as the study of essences (Husserl 1982, Streubert-Speziale and Carpenter 2007). Descriptive phenomenology, based on Husserl's ideas, aims to seek and uncover building blocks or essences through the exploration of the lived experience, it aims to "*directly explore, analyse and describe a particular phenomenon, as free as possible from unexamined propositions aiming at maximum intuitive presentation*" (Spiegelberg 1975, cited in Streubert-Speziale and Carpenter 2007:82). Husserl (1982) developed concepts that aimed to ensure that phenomenology became a rigorous science and three important concepts are integral to his philosophy and are discussed below:

- Obtaining descriptions from others through *intuiting*, *analysing* and *describing.*
- Searching for *essences* and their meaning through *imaginative variation.*
- Obtaining the purest description of the phenomenon through *phenomenological reduction*. (Norlyk and Harder 2010:428).

Phenomenology is categorised as a method of inquiry that fundamentally describes experience (Mapp 2008); more specifically it is a method of inquiry that clarifies the essential structure of the lived world of **conscious** experience

(Husserl 1982). Husserl was influenced by the works of Descartes and described phenomenology as a type of “dualism”; he explained that there are two separate but interacting realms, the mental and the material realm (Moustakas 1994:44). He explained that the material realm contained nothing but matter (the measurable objective world) that surrounds us. Experiences of this "material world", however, are not in the objects themselves but in the subjective impressions produced in us by our interaction with the material world through our senses (Husserl 1982). Thus, the mental realm is the subjective experience of the objective material world. Husserl extended his ideas, and recognised that a relationship exists between what exists in “conscious awareness” (the mental, subjective realm) and what exists in the world (the objective material realm). This he termed “intentionality”, the internal experience of being conscious about something (Moustakas 1994:28). Husserl explained that the appearance of the material object or “thing” in consciousness is the phenomenon. Phenomenology, therefore, seeks to uncover internal consciousness towards phenomena by *describing* and exploring the lived experience (Streubert-Speziale and Carpenter 2007).

Essences are elements or components that make up the phenomenon under investigation. Essences are elements of meaning and represent the basic units of common understanding of a phenomenon; importantly phenomenology aims to illuminate and describe these understandings. Through exploring the lived experience the essence, or the essential structure of a phenomenon, can be described and for philosophers such as Husserl the *description* of the lived experience, the uncovering of the *essences* of phenomena and then putting these *essences* back into “existence” represents phenomenology as a science and forms an important part of the philosophy and methodology (Husserl 1982, and Streubert-Speziale and Carpenter 2007).

Aligned with the concepts of describing experience and uncovering the essence of a phenomenon is the notion of *intuiting,* defined as “*the intuitive process that results in a common understanding about the phenomenon that is being investigated*” (Streubert-Speziale and Carpenter 2007:46). In phenomenology intuiting involves researchers reflexively meditating on the origins of the described experience and essences; this process is called *imaginative free variation*. In this process researchers reflect and “wonder” about the phenomenon under investigation, they reflect on the essences and descriptions from their participants

and vary the interpretation of these descriptions until the final essence of a phenomenon is revealed (Moustakas 1994).

The final concept important in Husserlian phenomenology is the notion of *phenomenological reduction* (Husserl 1982). This process occurs throughout the phenomenological process and is central to its methodology and method. Here, the researcher continually addresses personal biases, pre-suppositions and assumptions relating the phenomenon under investigation to obtain the purest description of the phenomenon based on the participants' descriptions. This is achieved by a process of critical self-evaluation and reflection and ensures that opinion and prejudice are suspended to focus attention on what is essential in the phenomenon. Frequently this act of critical self-awareness and putting to one side and holding in abeyance personal beliefs and prejudices is called bracketing (Giorgi 1997, Hamill and Sinclair 2010, LeVasseur 2003, Norlyk and Harder 2010)

The above overview is a summary of my understandings of the theory, philosophy and concepts that underpin phenomenology and which guided the design and methods of this study. An understanding of phenomenological principles was essential for the success of this investigation. Norlyk and Harder (2010) conducted a systematic review and analysed eighty-eight studies for phenomenological congruency. Interestingly, they identified that many authors did not clearly articulate a particular phenomenological approach nor did they explain or discuss the underpinning phenomenological concepts that guide a study's design. Norlyk and Harder (2010) argue that this impacts on the quality and credibility of the design of the study.

Citing Giorgi (1997), Norlyk and Harder (2010) opined that three broad criteria should be considered when embarking on descriptive phenomenology:

1. Descriptions should be obtained from others from their perspective,
2. The adoption of an open attitude through phenomenological reduction and bracketing should occur,
   and
3. The search for the essence (invariant meaning) for context should occur through the process of imaginative variation.

These three criteria are aligned with Husserl's philosophical approach and were used to ensure that this study remained congruent with descriptive

phenomenological principles. Importantly, these criteria were embedded into the study design and informed the methods of my study including sampling, data collection, data analysis and methods to ensure rigour. Further discussion relating to these concepts will take place in the design and methods section of this chapter.

Further Reflections and the Development of the Research Question

I reflected on my understandings of phenomenology, in particular the notion of intentionality and developing an understanding of the essence or essential structure of a phenomenon and I conjoined these ideas with the aim of my study. I considered the notion of "intentionality" and recognised that physiotherapists' consciousness would be directed towards the phenomenon of EBP; importantly, enabling participants to reflectively meditate on their experiences of EBP would reveal the essence and structure of its application. Through further reflection I also recognised that *"the conscientious and judicious use of current best evidence to help make decisions on patient care"* (Sackett 1996:71), acknowledges that EBP is a meta-cognitive process, a process that requires conscious critical effort and thought in the use of evidence. Implicit within this definition is the notion of being consciously aware of evidence and consciously applying evidence into practice (intentionality). Conjoining these two ideas, intentionality and the meta-cognitive processes of doing EBP, confirmed that investigating physiotherapists' experiences was commensurate with the philosophy and methodology of phenomenology. The final research question and objective were constructed based on my reflections on EBP and understandings of descriptive phenomenology.

Research Question

"What is the essential structure (essence) of practising EBP from the perspective of physiotherapists?"

Objective

To explore physiotherapists' experiences of using EBP and to understand the essence of its practice.

Design and Method

Participants

This section describes and justifies the design and methods used in this study. The goal of descriptive phenomenology is to uncover the essence or essential structure of a phenomenon by examining the lived experience (Speziale and Carpenter 2007). Husserl believed that access to data and information is through consciousness and knowledge is derived through the description of experience; individuals are seen as the vehicle through which the essential structure or essence is accessed and described (Priest 2002). Todres and Holloway (2010:183) identified that the type of data that needs to be gathered in phenomenological studies "*must be from participants that can give examples of experiences that they have lived through*". Furthermore, a sampling approach needs to be considered that aims to reflect the underpinning phenomenological approach; a method that allows for the selection of people whose experience represents the 'typicality or atypicality' of [the] phenomenon under investigation [in this case the practice of EBP] (Sandelowski 1986:32).

Moustakas (1994:107) identified that the essential criteria for sampling should include participants that have experienced the phenomenon and are willing to share the experience [of EBP] with the researcher. Therefore, participants needed to have an understanding of its theory and practice and also needed to be working in the clinical environment; this would allow participants to communicate their understandings and use of EBP by exploring their experiences. For this study purposive sampling was used to select "information rich cases" (Patton 1990) and is considered to be the most commonly used approach in phenomenological inquiry (Streubert-Speziale and Carpenter 2007:90). There are several methods for purposefully selecting information rich cases (Patton 2002); criterion sampling is one of these methods and was used in this study. This method of sampling selects participants based on a set of pre-determined criteria (Patton 2002).

The criteria used to select the participants in this study were:

1. Participants had studied the EBP module for physiotherapists at Coventry University.
2. Participants were working in clinical practice as physiotherapists.

3. Participants were able and willing to donate up to two hours of their time, which included up to 60-120 minutes for an interview as well as time allocated for travel, briefing and informed consent.

The Chartered Society of Physiotherapy (CSP) formalised the need for evidence based and research based practice in the Society's research strategy (CSP 2000, CSP 2014). EBP has become an important factor in physiotherapists' continuing professional development. In response to this need the physiotherapy department at Coventry University changed its approach to teaching research. An "Evidence Based Practice and Research module for Physiotherapists" was created in 2001 to educate physiotherapy students. The core philosophy of the module is detailed in the paragraph below, but the complete "module descriptor" is presented in Appendix II.

Evidence Based Practice for Physiotherapists Module 210PH

> *"This module will explore the principles of contemporary evidence based practice and will develop students' abilities to assess the value of available research findings and other sources of evidence. Developing students' evidence based practice capabilities will promote an understanding of quantitative and qualitative research, equip them with skills necessary to make practical decisions about patient care, as well as introducing them to some of the complexities of clinical decision making in areas of cardio-pulmonary, musculo-skeletal and neurological physiotherapy."*

Over a period of six years approximately 750 students studied this module and are now practising physiotherapists. I therefore had potential access to numerous students thus meeting the first and second criteria as detailed above. I was also interested in these students so that I could explore their knowledge, skills and behaviours relating to the theory and practice of EBP. The selection criteria ensured that participants had the necessary experience that would demonstrate "intentionality" towards the phenomenon of EBP.

Recruitment and Sampling Adequacy

Initially a sampling frame was created from student records held within the University and prospective participants were contacted, but this achieved a limited response, a second and more productive strategy was adopted. Twice a year the

Coventry University Department of Physiotherapy delivers a clinical educator study day. Current physiotherapy clinical educators who mentor Coventry University undergraduate students attend this course and discuss issues relating to clinical education. Clinical educators are invited across three of the ten national Strategic Health Authorities (SHA's) (West Midlands, East Midlands and South Central); these SHA's employ Coventry University physiotherapy graduates. I used the study days as the second mechanism for recruiting participants into my study. A list of clinical educators was made available to me for the two days and I identified approximately thirty of these people as Coventry University graduates. Each met the criteria above. I approached as many of the thirty graduates as possible. I discussed my study with them, outlining its purpose and methods of data collection. If they indicated interest in learning more about the study and their potential involvement I asked for their home email address so that I could send further information. This process of recruitment took place on Tuesday 31st March 2009 and Thursday 2nd April 2009 and a total of 21 graduates meeting the inclusion criteria expressed an interest.

Graduates that registered an interest were sent an email explaining the nature of the study along with a participation information sheet and consent form (Appendix III). This gave participants the opportunity to ask questions about the study and to decide whether to take part or not. There were numerous non-responders and three graduates explained that the interview was not for them, leaving a total of seven candidates for interview.

The Use of an Online Diary

This initial recruitment stage signified the start of the research process and at this point I started to write an online diary to document the research process. I used the diary for keeping a self-reflective journal on the process of my research. The diary aimed to develop reflexivity and to foster a critical approach towards my research. I used the diary to enable me to examine "*personal assumptions and goals*" and to clarify "*individual belief systems and subjectivities*" (Ortlipp 2008:695), in relation to the phenomenon under investigation. The diary was my focal point for attaining phenomenological reduction and became the vehicle that allowed me to "bracket" my personal beliefs and prejudices. Bracketing is a complex and debatable process and will be considered in detail towards the end of this chapter. The diary also enabled me to keep track of the research process and

helped me to reflect on and examine the design and methods of my study. Selected diary excerpts can be found in Appendix IV.

One of the first entries in the blog was a reflection on the recruitment process. Interestingly, graduates expressed a keen interest in the study to such an extent that one of them started to give me a detailed account of her experiences of EBP.

> *"One potential participant asked more questions about the study and started to give me more detail about practising EBP than I required. Politely, I explained that I needed to save this rich information for the interview.*
>
> *This I believe to be important as I don't want to enter into dialogue with potential candidates at this point for risk of contaminating the data and also affecting my beliefs towards this subject area."*
>
> *Diary: Thursday 2nd April 2009 (Appendix IV)*

Sampling Adequacy

Sample size in research is an important part of the design: fundamentally there needs to be a reasonable number of participants for successful data collection and analysis, but not too many subjects that would drown the researcher in too much data (Morse 2000). Unlike quantitative research where the sample number needs to be representative of the target population to ensure external validity of the results, breadth and quality of information is more important than total numbers of participants in qualitative research (Sim and Wright 2000:50). In fact transparency and adequacy of the sampling process in qualitative research is more important than numbers in that there should be enough discussion and thought about the sampling process to provide depth and richness to the data and maximum opportunity for transferability of findings (O'Reilly and Parker 2012, Spencer et al. 2003). Seven participants were identified in the recruitment stage which raised the question as to whether this was adequate enough to enable the collection of meaningful data and to allow the findings from my study to be transferable.

Qualitative research does not aim to acquire a fixed number of participants; rather it aims to gather sufficient depth of information as a way of fully describing the phenomenon being studied (Fossey et al. 2002). One method that has been

described to ensure an adequate and transparent sample is the notion of data saturation. LoBiondo-Wood and Haber (2006:156) define data saturation as when "*ideas surfacing in the dialogue are ones previously heard from other participants*". In other words, no new data is revealed and old data is repeated. Similarly, Sandelowski et al. (1989) argue that sample size will be determined when enough context rich material has been collected and when data saturation occurs.

The idea of data saturation as a method to justify sample size is contentious and has been discussed extensively in qualitative literature. Unlike quantitative research where sample size can be calculated using previous data and the use of power calculations (Petrie, Bulman and Osborn 2002), estimating the sample size in qualitative research does not have a clearly articulated set of guidelines. Reilly and Parker (2012) argue that the increasingly ubiquitous use of the term data saturation is becoming accepted and expected in qualitative research. However, Reilly and Parker (2012:1-4) suggest that "*accepting data saturation as a generic quality marker is inappropriate,*" mainly because, "*while originally developed within grounded theory, theoretical saturation, and later termed data/thematic saturation for other* qualitative methods, *the meaning has evolved into a one glove fits all approach*". As Reilly and Parker (2012) discuss, there is significant confusion in terms of what saturation means, how it should be used and when it is applicable; as alluded to earlier the focus should not be on sample number but more on sampling adequacy (Reilly and Parker 2012).

In this study the notion of data saturation was not rejected but an approach that allowed for transparency and flexibility was used in an attempt to ensure sample adequacy. Data saturation is about ensuring that enough context rich data has been collected. Morse (2000) suggests that the quality of data, the scope of the study, the nature of the topic, the amount of useful information obtained from each participant, the number of interviews per participant, and the qualitative method and study design should be considered in the data saturation process. Although these criteria are not able to calculate a precise number, they can be used to defend the researcher's estimate of the number of participants for a particular study. The following points were considered that enabled me to ensure sampling adequacy.

Morse (2000) explained that the broader the scope of the research question, the longer it will take to reach saturation. If the scope is too narrow then the detail and

level of analysis may be superficial. On reflection my study seemed to be reasonably complex but not overly complex such that it would require an impractical number of people to interview.

Morse (2000) suggested that if the topic being studied is obvious and clear, and the information is easily obtained in the interviews, then fewer participants will be needed. In context, the research question, aims and objectives for this study were reasonably clear and well formed, indicating “on balance” that a reasonable number of participants should be considered.

In terms of quality of data, Morse (2000) identified that some participants are able to reflect and express themselves better than others: they may be more articulate and have significant experience of a particular topic. Subsequently the quality of data will be rich and detailed, requiring fewer participants. Physiotherapists are degree educated and are excellent communicators; the notion of them being reflective practitioners is developed throughout their education. Thus, the quality of data obtained in relation to EBP, in theory, should be reasonably rich and detailed.

Morse (2000) also identified that study design is another important principle to consider. Phenomenological studies generate a lot of detailed and rich interview data per person; this is necessary so that experiences can be explored in depth (Mapp 2008); because phenomenological interviews collect a large amount of data (Fossey et al. 2002) samples can therefore be small. Creswell (1998:65&113) recommends that when using long interviews up to ten people for phenomenology could be used and Morse (2000) concurs.

In summary, conjoining the notion of the scope of the research, quality of data and study design it was reasoned that for this study ten participants would be enough to achieve a level of data saturation and subsequent sampling adequacy. Thus, the initial seven participants recruited were not enough to achieve this so three more graduates were recruited.

Over a period of several months from 18th June 2009 to 23rd February 2010 the first seven participants were interviewed and my reflections were documented in my diary. In part, the reflections and observations aimed to reflect a transparent process to data saturation and sampling adequacy. For example, I reflected on my interview technique and documented good strategies and things that did not go so well. I asked myself questions such “*Is this data rich and detailed enough?*” and

"*Am I facilitating this interview to allow the participant to describe their experiences in detail?*" The following example illustrates how I considered sampling adequacy and data saturation.

> *"This interview seemed to be much more in depth and I was pleased that the interview went on for 1 hour 30 mins. It was terminated based on the premise that we both seemed to be asking similar questions and responding in similar ways. Thus it seemed [as] if data saturation had occurred."*
>
> *Diary: Thursday 2nd July 2009 (Appendix IV)*

> *"Again a very interesting interview which to a certain extent is revealing very similar responses to the other participants, is this the beginning of data saturation?"*
>
> *Diary: Monday 22nd February 2010 (Appendix IV)*

By the end of the seventh interview it was clear that further data needed to be collected: new ideas were still emerging although there were some repeating patterns of information. Two graduates, who were experienced clinicians, were studying a Physiotherapy Master's degree at Coventry University and agreed to take part in the study. Another participant had secured a teaching position within the university and also agreed to take part. Reflections on the data collection and sampling adequacy continued and by the tenth interview I felt that enough data had been collected. However, I needed to be sure that I had enough context rich data so I recruited two more graduates; these were selected from a third clinical educator study day that took place in March 2010. The twelfth and final interview took place on 2nd June 2010 and at this point enough context rich data was deemed to have been collected.

Ethical Considerations

The research project gained approval from the Coventry University Ethics committee and received approval on 27th March 2009; a Bath University SREAP form was completed for audit purposes. Further details of the ethics approval can be found in Appendix III.

The NHS Research Ethics Committee (REC) for Wales was also approached; details of the project were sent to the committee on 17th June 2009. The

committee reported that this study fell outside of the remit for NHS research committees as set out in Section 3.1 of the Governance Arrangements for Research Ethics Committees 2001 and as such would not require REC review (Appendix III).

Informed Consent

Sim (1986:584) defined informed consent as "*the voluntary and revocable agreement of a competent individual to participate in a therapeutic or research procedure, based on an adequate understanding of its nature, purpose, and implications*". Sim (1996:105) elaborates and explains that informed consent consists of four parts: disclosure (providing adequate information), comprehension (understanding of information), competence (ability of participants to make a rational decision), and voluntariness (no coercion).

An email that outlined the nature of the study and a participant information sheet was sent to participants that registered an interest. The participant information sheet explained the purpose of the research, how information would be collected and stored, and possible harms and risks, and detailed the rights of the participant should they wish to take part in the study. Participants were encouraged to contact me to ask questions or to arrange an interview. If potential participants did not respond then no further contact was made in order to prevent the perception of coercion.

There were few risks associated with this study but risks, however small, were presented to each of the participants. The main risk related to the nature of discussion around EBP. The interview could lead participants to discuss sensitive information about their work practice. This in turn had the potential to compromise their professionalism (Richards and Schwartz 2002). This risk was therefore disclosed to each participant on at least two occasions, within the participant information sheet and verbally at the start of each interview. It was explained to each participant that to reduce risk, anonymity of data, names and places of work would be assured. At the start of each interview I checked that each participant understood the nature of the study and associated risks and asked them to sign a consent form. Details of the participant information sheet and consent form can be found in Appendix III, both were written in plain English and followed the guidelines recommended by the Coventry University Ethics Committee.

Confidentiality

In phenomenological research, maintaining participants' confidentiality is often an ethical concern because of the depth of description relating to experiences, in this case related to their area of work (Richards and Schwartz 2002). Confidentiality and anonymity were maintained by using pseudonyms throughout the data collection, analysis and reporting of results. Each participant was given a pseudonym and on occasion specific contextual details that could have revealed the identity of the participant or place of work were also changed. All participants were given the choice to take part in the study and had the right to withdraw at any time without prejudice, ensuring their autonomy in making a choice to take part in this study (Huycke and All, 2000).

Audio files were transferred from a digital voice recorder to a password protected personal computer (PC). Transcribed data from each interview were also stored on a password protected PC with the intention of keeping data for a five year period in accordance with University requirements.

Sources of Data and Data Collection

Rationale for In Depth Interviews

Colaizzi (1978:57) states that "*If I wish to know what a particular phenomenon is, that is, if I wish to identify with it.....as a phenomenologist, I must begin by contacting the phenomenon as people experience it*." He goes on to say that, "*...I would first gather from my subjects their descriptions of what their experience is like*." The aim of this study was to gain in depth understanding of how physiotherapists practise EBP in the real and complex world of clinical practice; and, as previously discussed, the use of phenomenology describes these mentally created visions by exploring participants' experiences. The individuals are seen as the vehicle through which the essential structure of the phenomenon [practising EBP] is accessed and described (Priest 2010).

Previously, I acknowledged that the design and methods of this study needed to be congruent with a phenomenological approach. Norlyk and Harder (2010) explained that descriptions should be obtained from others from their perspective and that the search for the essence (invariant meaning) for context should occur. To ensure a congruent approach to my phenomenological study and, as Husserl

explained, to “contact consciousness” of each participant to enable the understanding of the essence of a phenomenon, in depth interviews were chosen.

For a phenomenological study the process of collecting data involves the use of long interviews or in depth interviews (Moustakas, 1994:114). Such methods are considered of most value, in that the aim of data collection is to describe the meaning attributed to experience of a phenomenon by a small number of individuals (Creswell 1998:122). Sandelowski (2000) agrees and suggests unstructured or phenomenological interviews are most appropriate for discovering the who, what, when and where of experiences; and, as Fossey et al. (2002) suggest, such interviews are the technique of choice as they generate first person descriptions of the experience of the phenomenon of interest (experiences of EBP).

Interview Design and Application

Patton (1987:113) explained that there are different types of in depth or qualitative interview, one of which is termed “the general interview guide approach”. With this type of interview a basic checklist is prepared to make sure that all relevant topics are covered; the checklist is a guide rather than a structure and allows the interviewer to explore, probe and ask questions deemed interesting and important to the researcher and the participant. Turner (2010), citing McNamara (2009), agrees and suggests that this type of interview provides more focus than a conversational approach but still allows freedom and adaptability for obtaining information. I decided that my approach needed to be focused yet flexible enough to facilitate participants’ descriptions of EBP, to explore the meaning of their descriptions and to allow for the capture of its essence: in depth qualitative interviews using a “general guide” suited the purpose of this study.

To ensure a fluid and flexible structure the interview guide contained a list of topics that required discussion with the participant. The guide and topics for discussion were created based on the nature, aims and objectives of this study (Ryan, Coughlan and Cronin 2009). The interview guide was made up of five phases which aimed to promote discursive responses around participants’ experiences of EBP. I practised my interviewing technique and piloted the interview guide with a colleague prior to commencing data collection. The interview was digitally recorded so that I could revisit and review the interview process and reflect on my

technique. A de-brief session took place with the colleague after the interview to discuss and critique the interview guide, interview technique and content. The de-brief session drew on our experiences of using evidence in practice, our involvement in teaching evidence based practice and our shared interest in phenomenology. Numerous comments were discussed and these were entered into my diary under two separate headings: “Preparing for the Pilot” and “Reflections on the Pilot Interview” (*Diary: Monday 15th June 2009 (Appendix IV)).* Key issues were identified: I recognised that I needed to adapt the interview guide to act more as an aide-mémoire; I needed to recognise that long pauses were acceptable to allow the interviewer and interviewee time for reflection and to compose and answer relevant questions; and I understood that my personal opinions and beliefs did impact on how I questioned the interviewee which required me to reflect “in and on action” to recognise my influence on the interview process. Later in this chapter the notion of bracketing and phenomenological reduction will be discussed and explained within the context of this interview and study.

The interviews took place between June 2009 and September 2010 and followed the interview guide which is detailed in Appendix V. The first phase of the interview aimed to develop a rapport with each participant, to outline the purpose of the interview, to discuss the ethical issues related to the study and to obtain demographic and biographical information. Moustakas (1994:114) explains that phenomenological interviews often start with social conversation with the aim of developing a relaxed and trusted atmosphere, an important component before moving onto more in depth questions. The participants were known to me, which posed some interesting dilemmas and advantages. I knew the participants by virtue of the fact that they had been students at Coventry University; this enabled the rapport building phase of the interview to develop rapidly. Rubin and Rubin (2005) opine that such situations of familiarity allow for the collection of very rich, in depth and broad data; certainly reflections on my interviews confirmed this point. In contrast, Rubin and Rubin (2005) also suggest that a close relationship may preclude the interview process or lead to researcher bias influence. I recognised these as potential issues as I interviewed participants; I reflected on and described these in my diary with the intention of encouraging participants to express their opinions honestly and fully.

> *"I asked if she felt that clinical experience was a form of evidence. It was clear from her body language that she felt that clinical experience was important but there was a clear hesitation and tension… I recognised this internal conflict and I re-assured her that it was her thoughts and opinions that were important and not what I thought. This released the tension and she became liberated in describing her opinions and thoughts relating to EBP afterwards.*
>
> *Diary: Thursday 18th June 2009 (Appendix IV)*

The second phase of the interview aimed to move towards the central research area (Rubin and Rubin 2005:14-49); the purpose of this phase was to enable the participants to describe their experiences of EBP by using open questions such as, "*Tell me your experiences of using evidence based practice*". Phase three aimed to explore the meaning behind their descriptions of EBP and encouraged participants to reflect on their experiences. Such questions included "*How did you learn how to critically appraise?*" One technique that I found useful and used throughout the interview process was to recite the following to myself "describe, explore, probe!" (Rubin and Rubin 2005:114-120).

To maintain phenomenological congruency, phase two obtained descriptions of the phenomenon from the perspective of the participant and phase three aimed to explore the meaning of these descriptions (Norlyk and Harder 2010). Frequently, and throughout the interview process, I would ask myself, "*What type of questions should I ask to collect descriptive data about EBP?*" Colaizzi (1978:58) explained that "*the success of the questions used in the interview depends on the extent to which they tap the subjects' experiences of the phenomenon as distinct from their theoretical knowledge of it.*" This point was significant for me as it would have been easier to question the participants on their knowledge and understanding of EBP as opposed to their experiences. On reflection, and throughout the interview process, I reminded myself that the interview was not about the participants' knowledge per se, but more about their experiences. So I used questions that would elicit descriptions followed by questions that would probe for meaning. For example, in phase two participants were asked **how** they had critically appraised articles, this was often followed by a description and an anecdote from the participant. Phase three would then probe and explore further by asking how the participants **knew** how to critically appraise; this forced participants to reflect on

their practice to make explicit the conscious process of doing EBP; in effect phase three enabled reflection on their tacit knowledge. Therefore, throughout this process, I aimed for the interviews to be phenomenological in nature in that the in depth interviewing technique allowed for reflection that explored consciousness or intentionality towards the phenomenon of EBP, an important concept that maintains the congruency of phenomenology (Norlyk and Harder 2010). An example of this is detailed below along with other examples detailed in Appendix IV.

> *"Interestingly a lot more reflective interviewing was required to enable the participant to make the link with ebp and practice; her knowledge was indeed tacit and required the interview to raise her level of consciousness about the process of ebp."*
>
> *Diary: Thursday 3rd June 2010*

Phase four aimed to move away from highly reflective questions to questions of fact, such as, "*What were the main drivers and barriers for practising EBP?*" (Rubin and Rubin 2005:14-49). Phase five of the interview gave feedback for the interviewee along with a summary of thoughts and reflections about the content and conduct of the interview. This final section aimed to generate an element of participant validation or member checking to enhance the credibility and authenticity of the results of this study (Henderson and Rheault 2004). An example of summarising and giving feedback to the interviewee can be found in the interview transcript in Appendix VI.

Data Management

Data in this study were recorded and transcribed verbatim using a digital voice recorder which was set to "conference" to enhance the recording clarity. There were no recording problems other than occasional undecipherable words. The advantage of using the digital voice recorder included the following:

- Enabled quick download of the recording to a computer for immediate and multiple back up.
- Enabled immediate listening without the need for other equipment.
- Enabled password protection for security and confidentiality.

- Facilitated ease of transcription of the audio data into Microsoft Word document format.

Data Analysis

Colaizzi (1978) describes an approach for phenomenological data analysis using seven distinct steps or procedures. I chose this method of analysis as it provided a clear structure as well as giving a detailed "how to" approach that helped guide me through the process. Importantly, I chose this method as it enabled me to: describe the experience; explore the meanings behind the description; and reveal the essence and essential structure of EBP. This method ensured that data were analysed in a manner congruent with the phenomenological framework established to guide the study (Norlyk and Harder 2010). Colaizzi's (1978) seven steps and subsequent adaptations are discussed below.

Stage 1: Read all of the participants' descriptions, in order to acquire a feeling for them.

I listened to each of the participant's digitally recorded interviews, transcribed them verbatim and then checked each transcription for accuracy. This involved listening to the digitally recorded files and typing each transcript into a Microsoft Word document and then listening again to compare the written document with the recording. Statements or words that I could not understand were identified as such and marked on the transcript. Place names were anonymised and participants were given a unique identifier. Each line of the transcript was numbered to enable reference back to important statements in the data analysis process. The transcription was completed by me and a professional transcriber and an example is given in Appendix VII. I read each transcript several times to familiarise myself with the content and to gain a feeling for the whole data set. I made notes in my diary as well as making notes on the hard copy of the transcript.

Stage 2: Extracting Significant Statements. Return to each transcript and extract from them phrases or sentences that directly pertain to the investigated phenomenon.

For the first part of this stage I read through each transcript and highlighted demographic, biographical, education and work history for each participant. The

data were tabulated and are presented in Chapter 4 to assist the reader in establishing transferability of the findings from this study.

Significant statements relating to participants' experiences of EBP were searched for. I read through each transcript and asked myself, "*Is this a significant statement relating to the experience of evidence based practice?*" Patton (2002:485) explained that key phrases or important statements need to be found and located within the experience; thus, I read through each transcript and identified important "experiences" that related to EBP. Single sentences were highlighted that represented a significant experience as well as whole paragraphs of discussion between me and the participant.

Once significant statements had been identified I revisited the transcript at a later stage with "fresh eyes". Subsequently, changes were made and statements were added or removed from the list of significant statements. The highlighted statements and discussions that represented a significant experience were copied and pasted into a new Word document so that I could read them in isolation. This enabled me to read the statements, as Saunders (2003) suggests, with a "new sense of openness to the data". An example of copied and pasted statements can be found in Appendix VIII.

Stage 3: Formulating Meanings. Try to spell out the meaning of each significant statement.

Meanings were created for each of the extracted statements. I achieved this by studying carefully each statement to determine its sense of meaning (Saunders 2003) within the context of EBP. To accomplish this Colaizzi (1978:59) explained that the researcher must leap from what the participants say to what they actually mean and this requires "creative insight". To help with this "creative" process I asked questions such as, "*What is the meaning of EBP in the context of clinical practice?*", "*What does this tell me about EBP?*", or simply, "*What does this mean?*"

Colaizzi (1978:59) explained that constructing meanings from statements is a precarious leap, "*as one is moving beyond the transcript but should never sever the meaning totally from it*". Thus, I was extremely careful to stay as close as possible to what the participant was saying without imposing my assumptions on their meanings. This required me to consider each statement in context with the

discussions within the transcript. It was also necessary for me to “bracket” my assumptions so that the participants’ descriptions and meanings were not influenced by my beliefs. Bracketing, in context with phenomenological reduction, will be discussed towards the end of this chapter.

The created meanings were attributed to each significant statement. In some cases discussions were complex and rich with information; subsequently more than one meaning was often created. Table 2.1 identifies how the data was handled with single and multiple meanings for significant statements and further examples can be found in Appendix VIII.

Table 2.1: Tabulated Statements with Associated Meanings

Line identifier	Significant Statement	Meaning of Statement
LM 1045-1053	**##SV001##** Do you think that by using an evidence based practice approach it affects patient care? **##PT002##** Yes it does, because it makes me carry on questioning my practice, for example of evidence may introduce a new element of treatment or you may change the way you treat things slightly differently, or you can give the patient something for them to do and they don't have to come in three or four times a week to see you, so I think it does make a difference.	Using evidence makes a difference to patient care at a micro level
LM 853-858	also when my educator said to me what are your objectives and I said well I want to get a high mark because to me that means my experience, my knowledge and my experience of evidence based practice means to me that everything has come together and that I'm doing the best thing I can for the patient, so she went off to the superintendent crying, and unbelievable yes I know I know (in response to the interviewer’s facial expression).	Fundamentally EBP is patient centred. Abnormal response from peers towards attitude about using evidence Departmental culture affects the use of EBP

Stage 4: Organise the aggregate formulated meanings into clusters of themes. Refer these clusters of themes back to the original transcripts to validate them.

Once the meanings were created I clustered each meaning into a theme. Colaizzi’s (1978) description of this process is somewhat mechanical; he explains that each meaning should be placed into a theme cluster. However, I found this exceptionally difficult. With over 300 meanings I could not place them into any meaningful order; the process seemed artificial and did not work. I read each meaning in isolation and found it difficult to synthesise the analysis into any meaningful structure.

I adapted Colaizzi's (1978) method and read each transcript again and concentrated on the highlighted statements. I compared the statements with their associated meaning and, through reflection, related them to other similar statements in the same and other transcripts. As I worked through each transcript themes began to emerge, and through a process of imaginative and creative thought I began to map the statements into theme clusters. Many ideas and thoughts emerged and potential theme clusters were documented as a mind map to help create links and to identify significant themes. The mind mapping process was documented on flipchart paper so that I could arrange and change the clusters as they evolved; it also gave me the opportunity to see the clusters as a whole set of ideas. The mind maps are detailed in Appendix IX.

Colaizzi (1978) explained it is important to refer the theme clusters back to the original transcripts to validate them. After I had created the clusters, and established links between them, I went back through the each statement, meaning and cluster to make sure that they were stable and that they fitted together; importantly, as Creswell (1998:280) discusses, this ensured that the theme clusters emerged from the data.

Continuing with stage four of Colaizzi's (1978) method, the second part of the analysis reduces or collapses the theme clusters into significant themes. In doing so, the essence or essential structure of the phenomenon (in this case EBP) should be revealed. In descriptive phenomenology "searching for *essences* and their meaning occurs through *imaginative variation*" (Norlyk and Harder 2010:429). Colaizzi's (1978) method is deemed to be phenomenological in design but he does not discuss imaginative free variation. With this in mind, I integrated the notion of imaginative free variation into this stage of the analysis to help reduce the clusters into significant themes and to make sure that I maintained a congruent approach to descriptive phenomenology (Norlyk and Harder 2010). Colaizzi (1978) does stress that his method should be considered flexible and adaptable which justified the decision to embed imaginative free variation into the analysis.

Imaginative Free Variation

Husserl (1931, 1982) explained that in phenomenology the search for the essence of a phenomenon (invariant meaning) should occur through the process of imaginative variation; it plays a role in allowing the essence of the phenomenon to

manifest itself as an essential structure. Husserl believed that through imaginative free variation the essence of the phenomenon could be grasped and understood. This is achieved by imaginatively subtracting or adding one feature from or to the described phenomenon to allow for the discovery of features that are essential to the phenomenon.

The completed mind maps of theme clusters represented the raw structure and I looked for links and interconnections to explore the meaning and essence of EBP (Appendix IX). Using a process of imaginative variation I would remove theme clusters to see if the structure or meaning altered. If it did then the clusters were re-instated, if not then they were removed. In practice the clusters were rarely entirely removed but combined within other clusters; subsequently a cogent structure of EBP began to emerge without losing context or meaning. As I undertook this process links within the data began to form and significant themes that represented the essence of EBP became apparent (Appendix IX).

For example, a set of theme clusters related to how participants critically appraised articles. Some clinicians would use checklists, some would have an internal framework of appraisal that they used as they read articles (triggering), whilst others read and appraised articles tacitly (tacit appraisal). The definitions of EBP allude to the fact that the critical appraisal is a conscious process; it requires active thought and decision making and is not a tacit or unconscious process. In the process of imaginative free variation the tacit appraisal cluster was removed to see how it affected the structure of EBP. Removing this cluster enabled me to realise that this was an important part of the experience of EBP so it should, in this case, remain. However, it was clear that it formed part of a more substantial theme, one that recognised how evidence was critically appraised, so the different methods of critical appraisal were collapsed into a single cogent theme cluster.

I then reflected on these clusters and through a continuing process of imaginative variation I studied them to understand and develop a meaning; I looked for links and patterns whilst I explored the descriptions and meanings of EBP. By removing, adding and varying the data three key themes evolved:

- A personal theory of EBP
- Translating evidence into practice
- The impact of intrapersonal, social and cultural milieus on EBP behaviour

Stages 5 and 6: Exhaustive Description and Fundamental Structure.

In these two stages Colaizzi (1978:59) explained that the researcher should integrate the resulting ideas into an exhaustive description of the phenomenon. A description of the experiences of physiotherapists practicing EBP was written based on the three main themes and their associated clusters. This produced a cogent description and was written as a narrative account based on Saunders' (2003) approach to this stage of Colaizzi's method. The cogent description was written as an "*unequivocal statement that identifies the fundamental structure of the phenomenon [of EBP*]". The final statement and essential structure of EBP is presented in Appendix X and is critically explored within the discussion chapter.

Stage 7: A final validating step can be achieved by returning to each subject and asking the subject about the findings.

Three methods of participant validation were used: first, at the end of each interview I summarised the key points that arose from the discussion and asked participants to confirm these points (Appendix VI). Secondly, participants were sent their transcript and were asked to comment on the accuracy (Appendix VI). Thirdly, and in line with Colaizzi's method of data analysis, the final stage "returning to the participants" was a process that involved returning the essential structure to them for comment. The essential structure was returned to each participant and subsequent comments were noted and were reflected in the final analysis of the findings. Comments from participants can be found in Appendix X.

Ensuring Quality in Phenomenological Research

Ensuring quality in any research requires the rigorous implementation of data collection, handling, and analysis. It requires the researcher to be transparent and honest in documenting these methods and to be consistent within the philosophical assumptions and traditions of the research methodology (Guba and Lincoln 1994). Congruence and consistency between the aims and objectives of the research, the design and methods used to collect and analyse data, and the philosophical assumptions of the research methodology, are important to ensure the rigour of a qualitative study (Crotty 1998, Crotty 1996, Norlyk and Harder 2010). Throughout this project, I have endeavoured to demonstrate how the use of a specific methodological approach can guide and inform the design of a study

giving it coherence. I have aimed to obtain descriptions from others from their perspective, and to search for the essence (invariant meaning) for context through the process of imaginative variation. Throughout this study I have described, discussed and justified the methods used and have attempted to relate them to the underpinning phenomenological principles.

An important aspect of phenomenology is that of adopting of an open attitude through phenomenological reduction and bracketing; how this was achieved and how it contributed to maintaining rigour in this study is discussed below.

Phenomenological Reduction and Bracketing

Husserl regards experience as a fundamental source of knowledge; therefore his approach to phenomenology is strongly epistemological (Racher and Robinson 2003). Husserl explained that to understand the essential structure of a phenomenon we need to understand human consciousness and experience; this is achieved in an unbiased and rigorous approach to "describing things as they appear" (Dowling 2007). To achieve this, Husserl (1982) discussed phenomenological reduction as an approach to holding subjective perspectives and theoretical constructs in abeyance to enable the essence of phenomena to emerge. Thus, phenomenological reduction is a process that allows for the understanding of individual experiences without imposing our (the researchers') interpretations and assumptions (Dowling 2007). These assumptions, according to Gearing (2004), include the internal (researcher) suppositions and the external (phenomenon) suppositions, the former comprising personal knowledge, history, culture, experiences and values of the researcher, and the latter based on academic and scientific ideas (orientations or theories). As Hamill and Sinclair (2010:17) discuss how having "*foreknowledge can minimise the ability to research a topic thoroughly, assumptions are unconsciously brought into the research process reducing the 'openness' to understandings and meanings that participants bring*". In phenomenology it is important that the participants' lived experience and meanings of the phenomenon, in this case experiences of EBP, remain intact and are not distorted by the interviewer. Moustakas (1994:88-89) explains that to achieve this state of mind ideas are held in abeyance and the phenomenon is "bracketed" so that all external suppositions are "ring fenced". To achieve this state of mind or "epoche" Moustakas (1994:89) explained that one must "*focus on some issue…and find a quiet place where I can review my current thoughts and*

feelings regarding the issue…I then set aside my biases and prejudices to look again at the issue with new and receptive eyes". He explained that the epoche, the theoretical moment where all judgments about the existence is suspended, should allow for preconceptions and prejudices to enter consciousness and that through a process of reflective meditation they should be recognised and acknowledged and then released (from consciousness) so that one can encounter the issue with a "fresh" sense of purpose.

Dowling (2007) explained that none of the phenomenological philosophers, including Husserl, have developed a phenomenological research method. There is much debate and discussion as to what constitutes phenomenology as a philosophy but little in terms of guidance towards phenomenology as a method (Fleming, Gaidys and Robb 2003). As Streubert- Speziale and Carpenter (2007:82) explain there are numerous philosophic positions that guide the application of phenomenology but no singular approach. Similarly, how to achieve phenomenological reduction is not documented well. With this in mind, and to achieve a state of "*openness*" and to "*describe things as they appear*", numerous pragmatic strategies were used to enable "bracketing" of my presuppositions; these are discussed below.

Dowling (2007:132) explained "*that to bracket one's preconceptions one must make them overt and render them transparent.*" As discussed previously, I used an online diary to document my thoughts about the research process with emphasis on reflecting on the data collection and data handling process. This served as an important bracketing tool which enabled a conscious understanding as to how my beliefs towards EBP could potentially influence the participants' responses, for example:

> *"Bracketing out and holding my pre-suppositions in abeyance is now becoming a little more difficult. After each interview and during each interview it is clear that themes are emerging and that data is becoming saturated...as the interview continues similar themes are emerging and as an interviewer it is becoming difficult not to allow my previous thoughts and analysis on the interviews to affect the questioning. I'm certainly aware of this during the interview process and it is very akin [to] listening to patients...I know what the patient and the interviewee, in this case, is going*

to say before they say it and I have to hold back and hold my thoughts in abeyance to allow the interviewees to say what they really mean."

Diary: Thursday 4th March 2010

"The process of bracketing has allowed me to understand my deep seated beliefs about EBP, understanding my conscious and tacit beliefs allowed me to reflect on this and as such I was reflexive in my interview technique, quite often in my interviews I would hear in myself speaking to myself in my head, I would say this is not what EBP is, this is really disappointing, I would have thought that this interviewee would have understood the difference here, and the educationalist in me was keen to impart knowledge and correct the misunderstanding. Being reflexive on such thoughts and holding these views back were important, in doing so the participant was allowed to "speak". I listened authentically, without prejudice and I explored their experiences meanings and understandings and not what I wanted the interviewees to say."

Diary: Thursday 3rd June 2010

Another approach I used was a "bracketing interview" to foster reflectivity (Rolls and Relf 2006). The bracketing interview enabled me to engage in self critique and self appraisal of my experiences of EBP. The interview enabled me to be reflective so that my presuppositions "entered my consciousness" to enable me to recognise my influence in the data collection and analysis process. An informal contract was negotiated with my project supervisor to determine the nature of the interview. An interview took place that explored my beliefs and experiences and to make explicit my understandings; I then revisited and listened to this recording to develop reflective insight into my thoughts about EBP.

As part of the bracketing process I also considered writing up the literature review after data collection and analysis. Hamill and Sinclair (2010) explain that delaying the literature review in a study ensures that interviews, discussions and the analysis of the findings are not influenced by knowledge that exists in current literature and which subsequently informs thinking. Chan et al. (2013) agree and recognise that delaying the literature review minimises the impact of the researchers' pre-understanding of the research area. However, there is some contention as to when a qualitative literature review should occur. Cronin et al. (2008) advocate that it should occur at the start of the study, in this way new

research builds upon the literature and ensures that it has a secure foundation. Glaser and Horton (2004) suggest another rationale in that the literature should be treated as another source of data and should be conducted throughout the research process; researchers then become sensitised to concepts that may inform data analysis and subsequent theory production. In this study I aimed to maintain phenomenological congruency and I considered conducting the review after data collection and analysis as recommended by Hamill and Sinclair (2010). However, for pragmatic reasons, this proved difficult. Firstly, and not least, a literature review was required for developing a research proposal. Secondly, and after discussions with my supervisors, it was acknowledged that my interest and long standing involvement with teaching EBP meant that I was steeped in EBP literature and theory and had become part of my thinking. Delaying the literature review would not have been helpful or productive therefore the literature review took place at the beginning and during the research process. Subsequently reflection became the primary method for bracketing.

Potential Power Imbalance Issues in Phenomenology

In positivist research the role of the researcher and researched are mutually exclusive, the researcher alone contributes to the design of the study and is responsible for the creation of knowledge whilst the subjects themselves are viewed as the objects of study and are the source of important data; subsequently power imbalances between the research and researched are very much evident (Karnieli-Miller, Strier and Pessach 2009). In qualitative research the epistemic position of creating knowledge and the production and execution of the research process is seen as a researcher/participant co-production (Brinkmann 2007): qualitative researchers aim to blur the researcher-researched division. The research process is seen very much as a shared and collaborative venture and perceived asymmetries of power between the two are identified and attempts are made to reduce the differential (Gergen and Gergen 2000). Qualitative researchers have an ethical obligation to participants and need to identify potential power asymmetries in their study. Such imbalances need to be accounted for in an attempt to balance the rights of the participant with the researcher's responsibility for creating and producing valid and worthwhile knowledge (Brinkmann 2007).

Kvale (2006) and Almlund (2013) recognised that whenever human interaction takes place, inevitably, a power relationship develops even if efforts are made to

democratise the power differential. In qualitative research power asymmetries may occur in the following stages of the research process:

- The initial stage of participant recruitment
- Data collection
- Data analysis and production of the report
- Validation of the findings

Karnieli-Miller et al. (2009:282)

During the initial stage of recruitment the researcher holds the balance of power and decides how to introduce participants to the nature of the research and to "persuade" participants to take part. The power imbalance is between the researcher, who is in possession of the information about the study, and the participants who own the knowledge and experience that the researcher needs to acquire (Karnieli-Miller et al. 2009). In this study, as previously described in the ethical consideration section, participants were given the opportunity to decide to take part in the study once they had received relevant information. If the study was of interest to them then participants contacted me to arrange for an interview. In effect, participants were empowered to make the decision to take part in the study offsetting potential power imbalances relating to persuasion.

In terms of data collection most of the power lies with the interviewer, who sets the interview agenda, defines the research goals, determines the topics for discussion and guides the participant through the process (Brinkmann and Kvale 2005, Kvale 2006). This is not to say that the participant is devoid of influence, indeed the researcher is entirely dependent on the participant freely expressing their views and experiences and their willingness to divulge important information (Karnieli-Miller et al. 2009). Perhaps the key data collection power issue in this study related to the very nature of phenomenology and how experiences were obtained and the meanings of the findings explained (interpreted). Phenomenological interviewing required me to explore an individual's consciousness, often in explicit detail, to reveal the essence and essential structure of the phenomenon of EBP. This method of contacting consciousness exposes participants' inner most thoughts and beliefs and potentially places them in vulnerable positions amplifying the already established researcher-researched power differential.

Throughout the methods section I have iterated the importance of maintaining phenomenological congruency, such as the use of phenomenological reduction, and in doing so have reduced the potential for power imbalances. Phenomenological reduction, the process of holding personal assumptions in abeyance enabled me to bracket my beliefs, understandings and theories about EBP with the intention that participants would speak openly and freely about EBP with limited researcher influence. Thus, as Almlund (2013) suggests, through empathy and reflection, or in this case phenomenological reduction, my conscious and unconscious agenda was made explicit to enable a more equal balance of power between myself and the participant.

Karnieli-Miller et al. (2009) also identified that in the data analysis phase of qualitative research control and power returns to the researcher. The researcher seems to have total responsibility in the monopoly of the data analysis and interpretation of participants' responses (Brinkmann and Kvale 2005). In phenomenology, however, this is not strictly the case, an important part of the data analysis process is to share the final essential structure with participants for them to comment and validate the findings. This, to some extent, negates the perception that the researcher alone is involved with the final interpretation in that participants become part of the data analysis process and potentially offset power imbalances in this phase of the research process.

To summarise, this research was conducted in the interpretive paradigm using descriptive phenomenology informed by the work of Husserl (1931, 1982). The method of data collection, in depth interviews, was used to remain consistent with the philosophy of phenomenology. All interviews were transcribed verbatim and analysed using a phenomenological process as described by Colaizzi (1978). Ensuring rigour was framed around the notion that trustworthiness should be consistent with the philosophical and methodological assumptions on which the research was based. The findings of the analysis of the phenomenon drawn from the participants' lived experiences will be presented in the following chapters.

Chapter 3:
Participant Characteristics and General Experiences of EBP

Introduction to the Structure of the Study Findings

The data obtained from the participants were analysed using the methods espoused by Colaizzi (1978) as discussed and described in the preceding chapter. Three themes emerged from the analysis, these being:

- A personal theory of EBP
- Translating evidence into practice
- The impact of intrapersonal, social and cultural milieus on EBP behaviour

The findings from this study will be presented in this and the next three chapters. This chapter will give an overview of the demographic and other characteristics of the participants that, in part, will enable the reader to determine the transferability of these findings. It will also discuss the participants' values and beliefs about EBP which will serve as context for the content in Chapters 4, 5 and 6.

Chapters 4, 5 and 6 represent the main body of findings for this study and will describe and discuss the three themes that have emerged from the data analysis. This in depth discussion of each theme is congruent with a phenomenological approach and each theme is illustrated using statements from the participants. This represents the intuiting, analysing and describing component of phenomenological data analysis. Within these three chapters further narrative, biographical and demographic information about the participants is used to illuminate and give context to the findings and further enhances the transferability of the study.

Chapter 7 represents the synthesis of the three themes and aims to integrate the key ideas discussed in Chapters 4, 5 and 6 and to reduce participants' experiences into an exhaustive description of the phenomenon of doing EBP. The essence and essential structure of the phenomenon will be captured in this chapter and form the basis for the discussion.

Introducing the Participants

In total 12 participants were recruited in this study and all of them had graduated from Coventry University with a Bachelor of Science Degree in Physiotherapy. At

the time of interview the most experienced therapist had been qualified for seven years (graduated 2003) and the least experienced, eight months (graduated 2009). In terms of current work location, six participants worked at different NHS Hospital Trusts in the West Midlands Strategic Health Authority (SHA), two participants worked in the East Midlands SHA and one participant worked in an NHS Hospital in the South Central SHA. Two participants were self-employed in private practice, one in Buckinghamshire and the other in the West Midlands. One participant worked for a children's charity in Birmingham.

The nine NHS physiotherapists were employed under the Agenda for Change (AfC) pay scale. AfC assimilates staff to a salary according to an evaluation of their job weight under an NHS Job Evaluation Scheme (NHS Employers 2010). There are nine numbered pay bands, in this study participants were employed from band 5 (junior physiotherapist) to band 8 (senior clinical management position). A broad range of physiotherapy expertise was represented within the sample, ranging from a newly qualified physiotherapist, specialist physiotherapists, extended scope practitioners, a health care commissioner of services and a university lecturer. All major physiotherapy specialties were represented including musculo-skeletal, cardio-respiratory and neurological physiotherapy. Participant employment and post qualification experience are summarised in Table 3.1.

Table 3.1: Participant Employment and Post Qualification Experience

Name	Date of interview	Qualifications at time of interview	Initial employment/Junior/ band 5 physiotherapy rotation information	Post qualification employment /Senior/ band 6 /physiotherapy rotation information	Current position and time in post	Current geographical work location	Other information
Beth	June 2010	BSc (Hons) Degree in Physiotherapy Coventry University Graduated July 2009 **8 months qualified**	4 months working in respiratory care and neurological physiotherapy		**Band 5 physiotherapist:** 4 months working in musculo-skeletal outpatients	South Central SHA NHS Foundation Trust	Worked as a physiotherapy assistant at the same NHS Trust prior to her first band 5 post
Fran	June 2010	BSc (Hons) Degree in Physiotherapy Coventry University Graduated July 2003 **7 years qualified**	2 years covering musculo-skeletal outpatients, neurological and respiratory physiotherapy	1 year rotation, 6 months in neurological rehabilitation and 6 months in elderly care rehabilitation	**Band 7 physiotherapist:** 4 years in elderly medicine covering respiratory, general medical and neurological care	West Midlands SHA NHS Foundation Trust	
Helen	January 2010	BSc (Hons) Degree in Physiotherapy Coventry University Graduated July 2007 **3 years qualified**	2.5 years covering stroke care/neurological rehabilitation, musculo-skeletal, medical respiratory care and community physiotherapy		**Band 6 physiotherapist:** 4 months in Cardiac Surgery	East Midlands SHA University Hospital NHS Trust	Previous physiotherapy bank work experience working in Oncology
John	January 2010	BSc (Hons) Degree in Physiotherapy Coventry University Graduated July 2005 **5 Years qualified** Studying for an MSc in Manual Therapy at the time of interview	1 year 4 months covering community and intermediate and musculo-skeletal outpatients		**Band 6 physiotherapist:** 3 years 8 months in musculo-skeletal outpatients	West Midlands SHA Partnership NHS Trust	Occasional private work
Kerrie	February 2010	BSc (Hons) Degree in Physiotherapy Coventry University Graduated July 2005 **5 years qualified** PgCertEd from Oxford Brookes University	Occasional fitness instructor; work abroad post-qualification	2.5 years as college Sports Therapy lecturer and part time self-employed physiotherapist	**Self-employed:** 2 years working in 2 private clinics and 1 GP practice in musculo-skeletal physiotherapy. Self-employed fitness instructor and Pilates instructor	Private practice/ self-employed Home Counties	Occasional locum work at a day hospital covering a broad range of medical and post-operative conditions

Colin	June 2010	BSc (Hons) Degree in Physiotherapy Coventry University Graduated July 2005 **5 years qualified**	University Hospital employment for 2 years in the East Midlands covering the stroke unit, cardio-respiratory, medical and outpatient physiotherapy		**As a band 6 equivalent:** 3 years working in a hospice for children covering respiratory, medical, neurological and palliative care	Birmingham Children's Charity	
Kerry	July 2009	BSc (Hons) Degree in Physiotherapy Coventry University Graduated July 2004 **5 years qualified** Studying for an MSc in Acupuncture at the time of interview	3 years in a teaching hospital covering all major rotations: respiratory, paediatrics, neurology, outpatients	18 months specialising in musculo-skeletal outpatients as a band 6, in a hospital and 2 GP clinics in primary care	**Band 7 specialist physiotherapist:** Outpatients, acupuncture, triage and referral for investigations e.g. X-ray	West Midlands SHA University Hospital NHS Trust	London Marathon experience as a physiotherapist
Lesley	June 2009	BSc (Hons) Degree in Physiotherapy Coventry University Graduated July 2004 **5 years qualified**	14 months rotation covering non-invasive ventilation and cystic fibrosis, medical, elderly care, community and outpatient community	3.5 years as a senior, 2 in a specialist musculo-skeletal rotation. Covering orthopaedics, pain clinic, rheumatology, outpatients and outpatients in the community	**Band 7 spinal specialist physiotherapist:** 5 months in post and includes physiotherapeutic management of spine and low back pain. Currently able to request X-ray/MRI/Ultrasound	West Midlands SHA NHS Foundation Trust	Training to become an extended scope practitioner; acupuncture trained; ERMA radiology trained
Matt	March 2010	BSc (Hons) Degree in Physiotherapy Coventry University Graduated July 2004 **6 years qualified** Studying for an MSc in Manual Therapy at the time of interview	18 months rotation in a medium sized community hospital, covering respiratory care, neurological and musculo-skeletal physiotherapy	Band 6 physiotherapist, 18 months in musculo-skeletal physiotherapy working alongside the independent sector. Followed by a lateral move into the same position in another West Midlands Hospital	**Band 7 extended scope practitioner:** 5 months in post. Works in orthopaedic triage, refers for X-ray, MRI and on to other specialists. Interests include chronic pain management and treats patients in clinic	West Midlands SHA NHS Primary Care Trust	

Pat	Feb 2010	BSc (Hons) Degree in Physiotherapy Coventry University Graduated July 2004 **6 years qualified** Previous degree in chemistry	14 months in a Foundation Trust Hospital covering orthopaedics, rehabilitation in an outpatient setting, ICU and surgery, orthopaedics elective and trauma, musculo-skeletal outpatients and neurological physiotherapy	Band 6 physiotherapist, 2 years 5 months working in rehabilitation, acute phase in a community hospital, including community physiotherapy and intermediate care	**Teaching Fellow and a Health Care Commissioner:** Two current posts, one as a university lecturer in Physiotherapy and the second as a commissioner for stroke care services. Has been in post for 2.5 years	East Midlands University and East Midlands SHA Foundation Hospital NHS Trust	Occasional private work
Rhian	March 2010	BSc (Hons) Degree in Physiotherapy Coventry University Graduated July 2006 **4 years qualified** Studying for an MSc in Manual Therapy at the time of interview	18 months rotational post. Major rotations: respiratory, paediatrics, neurology, outpatients	Band 6 physiotherapist working in musculo-skeletal outpatients for a year including women's health	**Self employed:** Pilates instructor: Pilates presenter for the Australian Physiotherapy Pilates Institute: Private practitioner for 1 year	Private Practice / Self-employed West Midlands	Prior to physiotherapy employment worked with disabled people for 6 months. Foundation Acupuncture training with the Acupuncture Association of Chartered Physiotherapists (AACP)
Sue	June 2009	BSc (Hons) Degree in Physiotherapy Coventry University Graduated July 2005 **4 years qualified**	2 years on a 6 month rotational post covering musculo-skeletal, neurological physiotherapy, cardiothoracic surgery and medical respiratory wards. Then 14 months static junior post in neurological rehabilitation		**Band 6 physiotherapist:** 8 months in post in neurological rehabilitation	West Midlands SHA Rehabilitation Hospital	

Beliefs, Attitudes and Initial Understandings about EBP

A simple starting question was used to initiate discussion in the interviews about participants' values, understandings and beliefs towards EBP and to lay the foundations for in depth exposition of the main themes. Participants were asked: "*What does EBP mean to you?*" Each participant gave a description of what they believed EBP to be, for example:

> ***Kerry:KM:280-286***
> *[It's] Finding out what the best evidence is and* ***utilising best evidence to inform your practice,*** *so ultimately to give your* ***patients the best quality of care****.*
>
> ***Helen:HM:260-264***
> *It means using* ***research to inform your practice and to make it more effective****.*
>
> ***Sue:SM:387-390***
> *That's a really difficult one (laugh) I think it's making sure that* ***your treatment is in the best interests of the patient,*** *and if where possible it's been proven to be effective and safe and that you have got evidence to back up what you are saying, so as well as using your* ***clinical reasoning and judgement*** *you can say that this study was done and this backs you up.*

Other participants were less precise with their description but an understanding of the meaning of EBP was implicit within their responses.

> ***John:JD:154-166***
> *I was thinking about this earlier (laugh), I think it's about trying to use the best evidence that* ***I think I have available, whether that be things that I know or that I have read or experiential stuff, or that I have asked other people…****to me it comes in many forms, you know, you are influenced by things that you do and by things that you read, but I think …you actually* ***have to process everything, the whole lot together,*** *to decide whether I am doing evidence based practice.*

From these descriptions it was evident that participants were able to articulate their understandings of EBP. Similar to published definitions of EBP, the underpinning concepts described by the participants (and outlined in bold in the above statements) included the recognition that EBP was a clinical decision making or problem solving process, a process that recognised the value of evidence to support intervention and treatment, a process that aimed to improve or

manage patient care, and a professional development requirement. EBP can be conceptualised structurally as overlapping ideas which are different but linked. These linked ideas or 'concomitants of EBP' (French 2002) (Figure 3.1) reflect the beliefs and understandings articulated by the participants in this study.

Figure 3.1: Concomitants of Evidence Based Practice (French 2002)

The 'concomitants of EBP' (French 2002) are reflected in the many definitions of EBP. For example, Herbert (2005:2) suggests a "blueprint" for evidence based physiotherapy in that "*The practice of evidence based [health care] should be informed by relevant, high quality clinical research, patients' preferences and physiotherapists' practice knowledge*" and similarly Sackett et al. (1996:71)suggest that EBP is "*...the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients.*" While there is similarity between these definitions and the participants' interpretations of EBP, no clear guiding philosophy or theoretical framework that underpins its practice has been clearly explicated. This means that there does not seem to be any espoused guiding principles to support practitioners' choice or use of evidence to actuate their clinical decision making process. This supports Miles' (2007) observation that currently EBP is bereft of a theoretical foundation.

However, a more detailed examination of participants' responses and conceptualisations of EBP gave insight into possible theoretical foundations for practice. For example, participants described evidence in different ways and attributed different meanings to the concept of evidence and evidence based

practice. Some associated evidence solely with empirical research where as others saw evidence as anything that had value in their practice:

> ***Kerry:KM:297-301***
> *Well in clinical practice I would say that best evidence comes from large scale randomised controlled trials and systematic reviews, evidence taken from NICE guidelines, CSP guidelines, and then your lower end of the hierarchy, evidence would be from your smaller scale RCTs, case studies... which can still be relevant if nothing else has been done.*

> ***Sue:SM:460-463***
> *Ideally! Randomised controlled trials, but again it's difficult with the patients because you've got all the ethics of... if I give these people an intervention but not others then is it unethical not to give them that intervention because it might make a difference? Which makes it difficult to do RCTs…*

In some cases participants gave broader responses and had a wider view as to what made up “evidence”.

> ***Lesley:LM:483-489***
> *(long pause) God that’s a hard question! (Pause) uhmm… I suppose you've got different types of evidence, so you've got your published evidence, you've got your evidence from a clinical panel of people, I've got my own experience which I use as evidence at the end of the day... I don't know… it's a combination of things really isn't it is not just research papers it's combining your research, your clinical specialist information, information from colleagues, my experience and other people's experience, so it's a combination of things and not just a research paper.*

Participants described what they believed to be useful and valid evidence. For some, evidence was seen as research designs such as the ubiquitous randomised controlled trial. For others the notion of evidence was less clear-cut and practice based knowledge, experiences and anecdotal knowledge were valued as sources of evidence. Each participant clearly held a different set of beliefs relating to “what evidence based practice meant to them”. Examination of these beliefs suggested that a theoretical or practice framework existed that guided their application of EBP. However, these understandings appeared to be tacit and related to each individual’s experience. Further exploration of these experiences, of central interest in phenomenology, enabled the development of explicit frameworks that underpinned their conceptualisations of EBP. Chapters 4, 5 and 6 examine this notion in more detail.

Chapter 4:

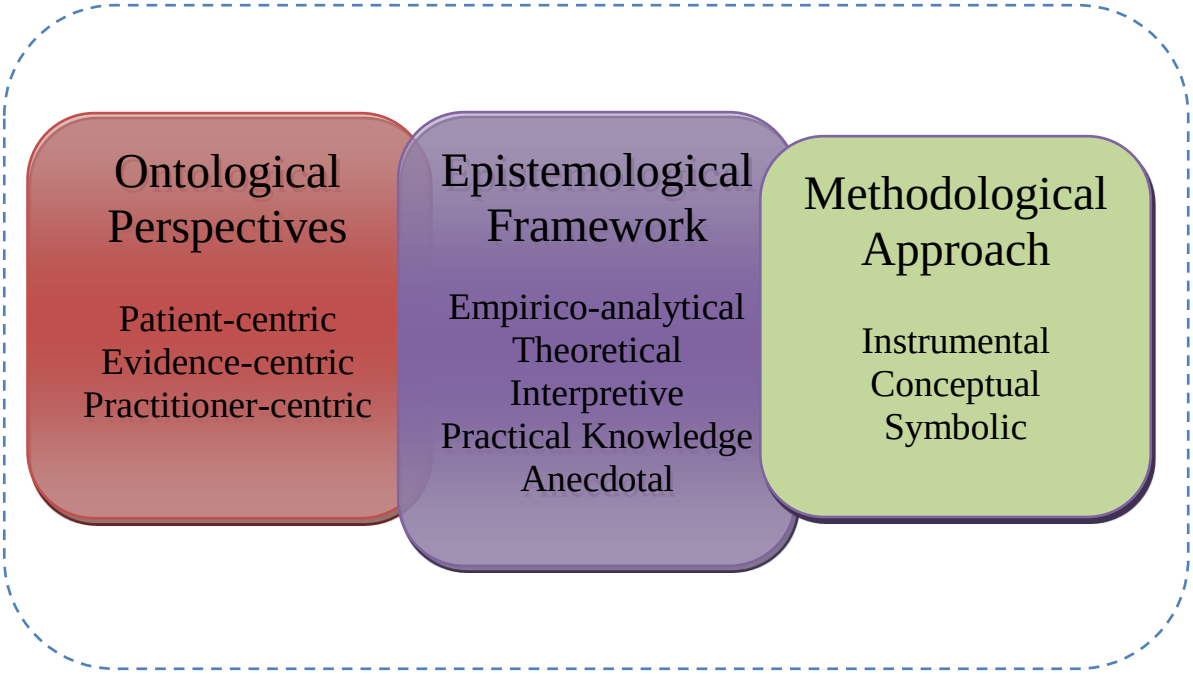
Theme 1: A Personal Theory of EBP

The aim of this study was to uncover *the essential structure (essence) of practising EBP from the perspective of physiotherapists.* Exploring participants' experiences answered fundamental questions as to how physiotherapists used EBP in the real and complex world of clinical practice and enabled a theoretical and practice framework, underpinning its application, to be developed; this framework incorporates three emerging and interrelated themes:

- A personal theory of EBP (theory)
- Translating evidence into practice (practice)
- The impact of intrapersonal, social and cultural milieus on EBP behaviour (context and circumstances)

This chapter describes the findings for the first of these themes, of which the basic structure is reflected in Figure 4.1.

Figure 4.1: Theme 1: A Personal Theory of EBP



Exploring participants' experiences identified that they each had a unique approach to EBP; for some this approach was clear and explicit whereas for others their application was tacit. The in depth interviews used in this study, as described in Chapter 3, enabled participants to reflect on their understandings and subsequently made explicit their personal theory of EBP. Despite the uniqueness of their experiences a common set of principles were derived from the analytic process. Each participant had developed an understanding of what evidence based practice meant for them; each participant had a preference for using or selecting specific types of evidence; and each participant used and applied evidence in a particular way. This concept of a personal theory of EBP is captured in a theoretical framework (Figure 4.1) which is structured using the following components:

- An ontological perspective: the meaning and reality of evidence based practice.
- An epistemological framework: the identification of evidence that has value for practice.
- A methodological approach: the application of evidence or how evidence is used in practice.

These components are interrelated and represent the foundation of this first theme and are illustrated by quotations from individual accounts.

An Ontological Perspective and Epistemological Framework of EBP

At the heart of EBP is the assumption that "evidence" somehow informs decision making and practice. For this process to occur, evidence based practice must first "mean" something for the practitioner. Second, the practitioner must consider and select appropriate evidence for use. Responses from participants and the subsequent analysis identified that practice experiences, personal and philosophical values, visions of care and personal beliefs about physiotherapy shaped their understandings and application of EBP. Exploring their experiences identified that each held an explicit or tacit understanding of the "purpose" or "reality" of EBP; that is, participants had developed an ontological perspective or view of evidence based practice.

Participants' ontological views were closely associated and related to their preferences for using and selecting different types of evidence. Based on their experiences as physiotherapists, participants had developed an understanding of what "valid knowledge should be" and had established their own "selection box" of valued evidence. This relationship between what evidence meant to them (ontological perspective) and their preferred choice of evidence, that is, what knowledge is considered valid (epistemological framework), is explored below.

Helen's EBP Framework

Helen graduated from Coventry University in 2007 and, at the time of the interview, had been qualified for three years. On qualifying Helen worked as a rotational junior physiotherapist in a large City NHS Hospital trust. Her rotations started at a specialist hospital covering medicine and medical respiratory physiotherapy. This was followed by musculo-skeletal outpatients, stroke care and then finally working as a junior physiotherapist in the community. She had also gained experience in oncology as a bank physiotherapist. At the time of the interview she explained that in September 2009 she had secured a band 6 post working at the Surgical Acute Unit for the same NHS Hospital Trust. As a cardio-respiratory physiotherapist she sees patients on ICU (intensive care unit) and HDU (high dependency unit) and follows them through to the ward and then on until discharge. She is also involved with the cardiac rehabilitation programme.

Helen's view of EBP, the reality of evidence based practice, revolved around the idea that evidence is at the **centre** of the process and **tells** her what to do.

> ***Helen:HM:363-369***
> *Erm…we struggle to get access to a lot of the journals… and then the papers are less relevant or they are case studies, and so you end up almost trying to deduce what they were getting at and almost* ***translating that to physio****, does that make sense?*

Here Helen explains that accessing articles can be quite difficult and once articles have been located, the findings often do not relate well to her group of respiratory patients. None the less, she attempts to make sense of the information from papers so that she can **"translate"** findings to her practice, the assumption being that the findings from research papers directly inform practice.

In the following excerpt the idea that "evidence is central" to the EBP process is further developed. In the following quotation Helen explained that a study described the benefit of a particular type of shoulder exercise for a particular group of patients. She used this information and applied it to a patient with a similar set of problems. In this way, evidence for Helen was central to the decision making process.

> ***Helen:HM:406-411***
>
> *You tend to find papers that were looking at post op rehab and that is not my patient group* ***and so there are sometimes things that you can translate across,*** *because you can look at it in…OK these guys post op might have had post op instability, my guy has got shoulder instability and so if these were exercises that were valid for that, then it might be worth a shot with my guy, if you see what I mean.*

The centrality of evidence was also demonstrated in team situations. In the following exchange she described how evidence was discussed and appraised in a departmental journal club.

> ***Helen:HM:508-513***
>
> *Yes and we do journal club sort of different places, do it at different times; certainly at the moment we are doing it every month and because of Sheila's [pseudonym for a managerial colleague] increased insight in having done all this British Thoracic Society stuff, we then take it away and appraise it and then come back and discuss it, and then as a group we label it as to what level of evidence we would rate it* ***and how much notice we are going to take.***

And

> ***Helen:HM:522-531***
>
> *…and yes we…almost agree on the criteria but then we would be chatting around* ***how we can apply this to practice and what we can do****, and is it out of our scope, and then we try to categorise the level of evidence.*

Her use of phrases such as, **"*how much notice we are going to take*"** and **"*how we can apply this to practice*"** relates to her experience with the team and implies that evidence is directly used to help make decisions. Helen's "ontological view" of the nature of EBP is that evidence is central to clinical decision-making. For Helen it's all about the evidence.

In the following excerpt Helen described inconsistencies in the theory of how "marching or walking patients" affects the ventilation of different parts of the lung. The theory that she described related to patients having areas of lung collapse that required re-inflating. She explained that some papers (**"different ones"**) suggest that marching may re-inflate the upper parts of the lung whereas others suggest that marching re-inflates lower parts of the lung. Implicit within her response is the idea that the findings from the paper inform practice; this provides another illustration of the central nature of evidence in Helen's beliefs about EBP.

> ***Helen:HM:854-863***
> *There were **different ones** [articles] about as to whether you should and how you should achieve it,...there was some debate about them and I think some of them were a bit older... they were looking back and **they were going on about** that if you march somebody you'd be more likely to **make them breathe more apically** and therefore... you are not using it to reverse basal atelectasis and that sort of side of it.*

Helen's ontological perspective clearly underpinned her belief that using evidence should be about promoting effective care for patients. Her response to the question "*What does evidence based practice mean to you?*" clearly revealed the type of evidence she prefers.

> ***Helen:HM:260-286***
> *It means using **research** to inform your practice and to make it more **effective.***
>
> ***Simon***
> *OK and what do you mean by research?*
>
> ***Helen***
> *It can be actual journal articles, whether it is a **meta-analysis** or an **RCT** sort of thing, but we are trying to be informed by the recent British Thoracic Society **guidelines and the National Service Frameworks** and that sort of thing.*
>
> ***Simon***
> *Do you consider anything else that you would use as evidence?*
>
> ***Helen***
> *I use my books, no not massively; I go a lot on senior input and best practice that goes on, within the unit frankly.*

Research is clearly important to her and for the delivery of **effective** health care. In this case, research is generally focused on RCTs but she also considers "book knowledge" and the experience of those senior to her as sources of evidence. Throughout the interview she was very precise in what she believed valid evidence to be, in particular approaches associated with quantitative research. Helen's preferred evidence seemed to be grounded in traditional hierarchies of evidence and her epistemological framework, her "selection box" of evidence, was grounded in an empirical analytical knowledge paradigm, a paradigm and set of beliefs that acknowledge the notion of objectivity and effectiveness (Higgs and Titchen 1995). The following response illustrates the value she places on such evidence hierarchies.

Helen:HM:536-564

There's…the normal sort of thing about the grades of evidence, certainly what I covered at Coventry, but there is something else that has come up recently, about being a 1a or 1b or 2a…and it is becoming more common practice in our journal club.

Simon

When you use this category, 1a, 1b and so on…does that enable you then to get that information from that paper to your patient group?

Helen

Erm…it almost gives us more justification particularly if there's an issue…you know if there are financial or changes to practice or anything like that. Which I'm not doing a lot of at band 6 level; it's more the band 7's and 8's that go and discuss with others…

Simon

So if it's high level of evidence as a group…

Helen

Yes we will do something more with it…

Simon

And if it's a low level study with poor internal validity then you wouldn't do so much with it…that sort of thing?

Helen

Yes

Interestingly, when asked about the value and use of other types of evidence, such as those associated with qualitative research, she responded as follows:

> ***Helen:HM:1020-1026***
> *We have used quite a few of the questionnaires and things and outcome measures and that sort of thing. A bit of patient experience…**I tend to go more with the quantitative and that would be it.***

Although she recognised the importance of qualitative research as a type of evidence she did not incorporate it into her practice. Similarly when asked about clinical experience as a type of evidence she recognised its value but reaffirmed the importance of quantitative research.

> ***Helen:HM:1028-1043***
> ***Simon***
> *And how important do you think your clinical decision making is…do you see it as a source of evidence…your experience?*
>
> ***Helen***
> *It's what happens in truth but if I ever had to stand up and demonstrate…you know…then I would be happier if I had some research that I could cite, because to me that would validate what I'm doing.*
>
> ***Simon***
> *And for you, just to reiterate, an important source of evidence for you to use are good strong experimental studies of some description?*
>
> ***Helen***
> *Yes and guidelines because if I'm doing what the CSP or the NSF's tell me what I should be doing, then to me that is backing up what I should be doing.*

Colin's EBP Framework

Colin had qualified from Coventry University with a BSc (Hons) degree in 2006 and had completed a general set of rotational jobs as a band 5 physiotherapist. Rotations included: respiratory care, cardiothoracic surgery, work on a child intensive care unit, acute medical care, physiotherapy outpatients and work on a stroke unit. At the time of the interview he had moved out of the NHS and was

working in a privately funded hospice for terminally ill children in a band 6 equivalent position.

Colin presented as a naturally critical professional, a realist and someone who attempted to depict things “as they are”. As this next comment suggests Colin tells it as it is!

> ***Colin:KH:123-125***
> *Yeah, and I love granny dragging and enjoying spending time with old people and I can listen to their stories but it’s not really a true reflection of what we do at uni is it?*

And

> ***Colin:KH:125-129***
> *You know you are kind of led down this path that you think you are going to be doing all this technical stuff but in reality you spend most of your time getting people up and down the stairs, up and down the wards and on and off the toilet; and that is a big part of what physios do… its nice…but it ain’t enough…it’s a nice novelty.*

Colin presents an open and honest attitude towards physiotherapy and his practice, an approach that is pragmatic and one that reflects the immediate needs of patients. In the following discussion he talked about the value of complementary medicine, his point being that “if something works” for the patient then it has value.

> ***Colin:KH:250-252***
> *So we have got some complementary therapists doing… erm… whether you believe in it or not, it seems to work with some people…*

And

> ***Colin:KH:258-261***
> *Yeah rub some feet and it makes kids poo strangely, but it does work with a couple of our kids but yeah we can generally get a good result, but how it truly works, I don’t know but yeah that is what they used to think about acupuncture though wasn’t it?*

Colin worked with disabled and terminally ill children and he recognised the importance of a holistic approach to care. In the following discussion he identified that providing holistic care required the child and carers to be the primary information givers and central to the decision making process.

Colin:KH:368-374

...we often find that the true problem isn't necessarily purely physiotherapy based, so tone might be down to a neurological process but it might be down to pain or constipation or a form of epilepsy…things like that. So for me it is about gaining as much information I can about the other things, and troubleshooting those... so it's about talking to people. Families tend to know best, they know their kids better than we can ever hope to… gaining as much information as you can really.

An understanding of his attitudes, his pragmatic approach and acceptance of a holistic view of care revealed the nature of his belief about EBP. His vision of care, philosophical values, and practice experiences demonstrated an ontological view which revolved around the idea that the patient is at the **centre** of the EBP process. For Colin it is all about the patient. This patient centred reality for his evidence based practice is demonstrated further when he discussed the value and choice of evidence.

Colin:KH:449-450

I think anecdotal evidence with our youngsters, on an individual basis is really important.

And

Colin:KH:453-456

I know that for some of our kids you do it one way and you get a good result and somehow it seems to work and that isn't always backed up by theory sometimes it's contrary to theory and you can't truly explain that.

These two statements are important and indicate that a relationship exists between his patient centred view of EBP (ontological perspective) and his choice and selection of valid evidence (epistemological framework). In this case, he recognised that the information gained from patients is an important source of evidence. Colin has a strong set of beliefs that locates the patient at the centre of his evidence based practice and results in him adopting a holistic and pragmatic approach to patient care. Based on this premise it would be reasonable to assume that his selection and use of evidence would be broad in nature. The following statements identified the types of evidence that Colin considered relevant to his practice. For example, Colin considers the use of experimentally based or quantitative type evidence in his decision making process, in this case considering research around cystic fibrosis, but he is not convinced that it holds value with his

patient-centric values. Here he discusses how results from quantitative research are difficult to use; the use of such evidence seems to conflict with his philosophical values and is deemed not suitable for his patient group.

> ***Colin:KH:478-481***
> *so you are trying to pull bits from those areas and there is no point I can't transfer CF physio to our group of patients because they're not the same, they not the same group so trying to find things that are detailed enough and specific enough for that group of young people.*

And

> ***Colin:KH:490-492***
> *I think there are some bits that you can sometimes take, I don't think you can truly dismiss it but that's not, that's not the right group because the problems with the CF patients are different problems to ours that are causing the need.*

For Colin practice experience represents an important source of evidence even though there is often a lack of theory to explain how treatments work. However, if it works evidence is useful and valid for the patient. In the following comment he explained that having an understanding of respiratory anatomy enabled him to judge the effectiveness of a mucous clearing technique. His knowledge of anatomy and physiology represented another source of information that contributes to his "selection box" of evidence.

> ***Colin:KH:402-408***
> *My theory as well as we're trying to clear stuff from deep in the lungs well the youngsters don't have a fully multi mucocillary escalator then…even if you have cleared stuff right at the alveoli end of the bronchial tree then its gonna take a while for the mucocillary escalator to move it to the point that you can actually expectorate anything so I think to myself well what's the point of whacking these kids…[if] it doesn't work.*

The final comment illustrates Colin's patient centred view of EBP and identified that he considered evidence to be useful if it has value for the patient. In the next comment he discusses how he managed to secure funding for a non-invasive ventilator for an 18 year old with muscular dystrophy. In this situation he selected qualitative research evidence in favour of practice based or anecdotal forms of information to afford a favourable outcome for the patient.

Colin:KH:1143-1151

I had to write a letter to the funding body to say we got this young man and he needs a second ventilator. I figured well if I can get a bit of research behind that letter then that would be quite helpful. And true enough there is research out there! Qualitative research about quality of life for people on long term ventilation which says that actually there is no significant decrease in quality of life post long term ventilation…which is quite helpful.

And

Colin:KH:1151-1158

I put that into the letter and I made strong reference to that…and the ventilator appeared soon afterwards. Yeah really useful because arguably we are looking at quality of life here probably more so than in a lot of other environments, you know, ***we are looking to manage people****! Rather than treat[ing] a body, if that makes sense?*

Pat and Rhian's EBP Framework

A different ontological view of the meaning of EBP evolved from the notion that the practitioner/therapist was central to the EBP process. For these participants their experiences and understandings of physiotherapy and the use of evidence were different compared with those described by Helen and Colin. From this perspective the reality of EBP meant that they, as practitioners, were at the heart of EBP and they orchestrated the use of evidence. For these participants evidence was there to inform **their thinking** which subsequently enabled them to make informed health care decisions. This practitioner-centric view of EBP is illustrated in the practice experiences of Pat and Rhian. For Pat and Rhian evidence is all about them.

Pat graduated from Coventry University in 2004 and prior to that had achieved a degree in chemistry and had worked in industry. At the time of the interview she had two jobs, one as a health care commissioner and a second as a university lecturer; both were acquired in 2007. Rhian qualified from Coventry University in 2006 and initially worked in the NHS as a band 5 and 6 on rotational placements. In the NHS she specialised in outpatients with a particular interest in women's health. In 2010 she left the NHS to work as a private practitioner with a special interest in musculo-skeletal physiotherapy and Pilates. As a qualified Pilates instructor she also presents for the Australian Physiotherapy Pilates Institute. At

the time of her interview she was in her final year studying for a Master's degree in Manual Therapy.

The reality of evidence based practice for Pat is that it informed **her** knowledge and understanding which subsequently influenced **her** health care related decisions. This included the treatments she offered and how she helped and cared for patients.

> ***Pat:PM:156-162***
>
> ***Simon***
>
> *OK so actual use of evidence to learn about your patients is another driver for you to engage with evidence whatever that might be…is that right?*
>
> ***Pat***
>
> *Yeah, for the patient experience and* ***for the effectiveness of my treatment, my practice and obviously my patient experience*** *as well…*

The idea that Pat is at the heart of her evidence based practice is illustrated below. In this discussion Pat explained that as part of her commissioning role she had to give interviews and presentations to the media.

> ***Pat:PM:364-366***
>
> *I mean a case in point occurred last week when I had to do numerous media interviews and I had a press release prepared for me that said alcohol consumption increases stroke in 40 year olds…*

The press release that Pat discussed was prepared for her by a support team, but she felt uncomfortable because she was not in a position to validate the information as being trustworthy **for her**.

> ***Pat:PM:366-370***
>
> *Well my first question was where did the piece of evidence come from to produce that evidence [press release]? There wasn't a reference on it, I felt uncomfortable saying that on another media format [TV] without knowing exactly where the source had come from. The researcher said that it had come from the Department of Health so it's fine…well it might not be!*

Pat acknowledged that ideally she would like to have found the original research for the press release and suggested this would have given her more confidence to present to the media. Time, and competing work pressures, prevented her from

finding and reviewing the evidence in order to adequately prepare her for the media interview as she explained below:

> ***Pat:PM:388-395***
>
> ***Simon***
>
> *Did you get time or chance to read the original source?*
>
> ***Pat***
>
> *No! In the end I didn't…I searched through the DOH website and found the reference for the material so it was there but there wasn't enough time…and I think that this is one of the ethical issues in commissioning…getting dedicated time to critiquing research there probably isn't enough hours in the working day to add research into your programme of work.*

Pat felt uncomfortable presenting such information to the media based on information she had not been able to validate. To reconcile this issue she reflected on her past experiences and understandings of the effects of alcohol and associated life chances and connected her understanding with the press release. She then felt more adequately informed and better prepared for the interview.

> ***Pat:PM:405-419***
>
> ***I am looking*** *to be proved right or wrong around the statements that* ***I have*** *found. I knew the obvious question would be well how many drinks would it take for a 30 year old to induce a stroke… That was probably what most people would have taken from the sound bite. But actually* ***I know*** *from other evidence****, I know*** *from building up risk scoring that every patient's risks are completely different.* ***So for me, I couldn't*** *look at that patient in isolation for just alcohol and an age group,* ***I knew that I had to see*** *beyond BMI, cholesterol, blood pressure, risk of diabetes. All of those other factors* ***that I know*** *that induce stroke or heart disease. So I suppose* ***for me*** *having that clinical understanding of what makes a stroke didn't triangulate for me…****I needed to see and take into consideration other evidence to get a deeper understanding behind it.***

For Pat the reality and meaning of evidence based practice is about ensuring that ***she*** had a deeper understanding of the subject, in this case accurate information around the effects of alcohol to present to the media.

Similarly, Rhian viewed EBP as something that informed her practice and decision making; that is, findings from evidence are there to be used, interpreted and then actioned by her.

> ***Rhian:RH:198-200***

> *What does it mean to me? Erm evidence based practice means using the research out there along with your clinical experience and also the patient's wishes to come* ***together to make the best choice*** *for somebody's treatment.*

In this response Rhian comments that she used research, experience and patient wishes to make decisions for patient care and that evidence (albeit from the patient or research) is used to inform ***her*** in order that she can "***make the best choice for***" the patient. For Rhian, evidence informs **her thinking** which is then translated into patient care, an approach where EBP centres on the needs of the therapist.

In the following passage Rhian described an experience in which the evidence related to low back pain is valued:

> ***Rhian:RH:208-216***
> *We had information leaflets and I also had information about the best management for low back pain. So when she came back I said to her these are the treatments the evidence suggests is going to be effective; this is the one I would like to try. And then she [said], "well I still want ultrasound". So then* ***I had to make the decision,*** *would the ultrasound be detrimental to her treatment or* ***could I use that*** *along with what was evidenced to have an effect? Because…then you have the placebo effect of what she thinks is going to be beneficial. So in the end I did, she did end up having the ultrasound along with the evidence that was suggested for her particular condition.*

In this situation Rhian attempted to use evidence as a reason to support not using a particular approach, in this case ultrasound which Rhian believes was not an effective treatment for low back pain and to dissuade the patient by suggesting more effective forms of therapy. Rhian states that she "***had to make the decision***" indicating that evidence was used to inform **her** thinking.

Despite the similarity between Pat and Rhian's practitioner-centric view of EBP their evidence preference was different. Evidence had value for them if it informed their thinking and action. For Pat this revolved around her work as a commissioner and for Rhian as a manual therapist and Pilates instructor. Pat's selection of evidence was broad and eclectic and numerous sources and types of evidence were considered; for example, the use of evidence associated with traditional hierarchies that include RCTs.

Pat:PM:248-253

I suppose evidence comes in a multitude of guises really, and I find it difficult to come away from the very academic definition of evidence and…RCTs, meta-analysis and all of this terminology I'm comfortable with, but I also see value in other forms of evidence so currently we have commissioned an evaluation of a service and that won't meet those same rigours as an RCT.

But she also stressed the importance of information obtained from patients; in fact she was in a position to commission research to report important patient experiences of care and used this to help with service design, delivery and improvement.

Pat:PM:261-266

Sometimes I think that it is very difficult to get that patient experience from ***pure research****. We are taking a very similar approach using* ***semi-structured interviews*** *allowing the* ***patient to talk*** *around a subject with the aim of looking at* ***service design and improvement*** *of the experience.*

She also discussed, in the comment below, the value of wider sources of information such as epidemiological and demographic information. Interestingly the final statement confirms that evidence or findings from evidence are there to inform her thinking and decision making.

Pat:PM:544-558

On a broader commissioning point of view…I am trying to replicate a service delivery model that has been done elsewhere in the country. And what I have to think about is the demographic; things like are my transport links the same? There has been some great work done in London around community stroke services…but every time that I go and present that and say that this is the way forward, they say ahh but you haven't factored in the rurality of the county. So I suppose, for me, the transferability is one of the most important things because I am working with very specific cohorts. But when I am looking at service delivery I am going very disease specific so I need to factor in ethnicity and things like that. ***So, those things have to be in those papers for me to be able to present it with confidence.***

Rhian on the other hand was more focused on her evidence preference; that is, evidence had value if it related to effective care. In the following comments she identified types of evidence that she valued and her use of language, such as, **"*no significant difference*"**, **"*increased risk*"** and **"*need for intervention*"** implied

that she preferred experimental research such as RCTs and systematic reviews as sources of evidence.

> ***Rhian:RH:452-472***
>
> *Erm one of the articles that I have recently read is related to my antenatal, post-natal courses that I run. And it was related to the exercise prescription and the incidence of requiring Caesareans or pylomectomies/pediotomies.*
>
> ***Simon***
>
> *OK and what was the outcome of the paper?*
>
> ***Rhian***
>
> *They found that there was* ***no significant difference*** *between the two groups of ladies who had or hadn't done the exercises; they didn't find that there was any increase* ***need for intervention****.*
>
> ***Simon***
>
> *OK. How has that affected the way that you treat your patients?*
>
> ***Rhian***
>
> *It is often the question that comes up and they [patients] often say if I'm doing these exercises does it mean I am at more risk of...* ***and now I can say to the…there is evidence to suggest you are not going to have an increase risk.***

Her preference for evidence that supports effectiveness appears to be related to her current educational experiences as a Masters student. In the following response Rhian discussed the use of evidence to inform **her** knowledge for writing essays and coursework for her Master's degree and focused around the use of systematic reviews and RCTs.

> ***Rhian:RH:422-432***
>
> *I'm doing an essay on lower back pain but I'm only doing it on manual therapy...I go potentially to the part of that* ***systematic review*** *associated with manual therapy and low back pain and take the references out of it. And [I] go through normal checks on those papers, because I don't know how to critically appraise the systematic review, I go back to the original sources [RCTs]. I am comfortable on how to do that and I believe I am coming up with a better form of judgement.*

On further exploration she acknowledged that she also valued "personal experience", "theory of practice" (in this case the theory behind the effects of ultrasound) and "information from books" as sources of evidence.

Rhian:RH:231-248

*...**personal experience** and also from the way that **ultrasound is meant to theoretically work.** This lady wasn't experiencing a significant amount of inflammation which is what that form of electrotherapy is meant to aid in that initial stage tissue healing…**actually gaining it from books…like** the Tim Watson book on Electrotherapy Explained…when you've read them through about best practice for low back pain, when they look at things like electrotherapy, it only really mentions TENS as the most effective form of electrotherapy.*

On further discussion, however, despite the recognition of the value of different types of evidence, it was clear that Rhian predominantly preferred evidence that informed the effectiveness of interventions. Interestingly when asked about qualitative research as a type of evidence she responded as follows:

Rhian:RH:699-710

I have never really needed to use that much qualitative research because it has been which treatment is best for and you have to choose the specific treatment technique and you have to choose the best treatment, and they have all been RCTs...but I think my mind has been blinkered…qualitative data, I think, as an undergrad is quite scary it's not...it's all flowery and not hard fact and it's hard when you starting out to see what is going on with all this floweriness. So I probably use more quantitative.

The data analysis process and the illustrative comments used in this chapter identified the existence of a personal theory of EBP that is implicitly or explicitly understood by individual practitioners and which is composed of an ontological perspective (**evidence-centric**, **patient-centric** or **practitioner-centric**) and an epistemological framework where different types of evidence (including empirical evidence, patho-physiological theory and anecdotal evidence) have value for the participant depending on practice context and their understanding of EBP. The third component of a personal theory of EBP, as detailed in Figure 4.1, relates to the use of evidence. The final part of this chapter will look at how evidence is applied or used in practice and describes the different *methodological approaches* used by participants.

Methodological Approaches for Using Evidence

Exploring the in depth interview data identified that participants used and applied evidence in a particular way. Participants in this study had developed a particular methodological approach, or a set of working methods, for using evidence that

mirrored a research utilisation framework described by Estabrooks (1999). Information and findings from evidence were used *instrumentally*, *conceptually* or *symbolically*. Estabrooks (1999:204) explained that "*instrumental* use" is the concrete application of findings into practice: findings are used directly from research or evidence; or they are translated into useable objects such as guidelines, clinical standards or protocols. As Sandelowski (2004:1371) elaborates, findings that have been translated into material objects are then "*put into practice and evaluated with a specific group of patients in specific clinical settings*".

Beth's approach clearly highlighted this concept of instrumental use of evidence. Beth worked as a band 5 physiotherapist and had been employed by a Hospital Foundation Trust for four months. She rotated around different physiotherapy disciplines and had been involved in two departmental evidence based practice projects, one looking at implementing British Thoracic Society (BTS) guidelines for respiratory care and the other developing departmental guidelines for the management of an Achilles tendon rupture. In the following discussion she explained how she had been involved in using guidelines in an *instrumental* way, Beth explained that standards, as determined by the BTS guidelines, were not met and to ensure an appropriate level of care for respiratory patients the BTS guidelines were used to develop local protocols.

> ***Beth:BR:106-115***
> *When I was on my last placement I was involved in a clinical effectiveness project where we basically were reviewing and analysing the BTS guidelines for spontaneously breathing adults…I chose bronchiectasis and how that's managed... and the BTS guidelines basically summarise a lot of the research out there and we were going to try and compare to see if [my] hospital comply with the treatment that they recommend.*

And

> ***Beth:BR:147-149***
> ***Simon***
> *So you were looking at the evidence to treat bronchiectasis?*
>
> ***Beth***
> *Yeah. Because it is actually done quite nicely for you in that big guideline, they've looked at the evidence…there's level I, level II evidence...So they summarised the evidence and we*

were trying to see whether we do that… so we are in the process of setting up an audit to see if we are doing that.

Simon

OK so you are going to do a clinical audit to see if you meet the standards documented in the guidelines, what was your role in all of this?

Beth

A lot of it is reading the information and then summarising... we then got together in a meeting and just bounced ideas off of each other and we tried to identify if there were any gaps that was clearly highlighted that [my] hospital wasn't doing... and we decided rather than getting all the physios together from [my] hospital to read through that lengthy document... we are going to summarise it in a nice A4 sheet for each condition. So we are in the process of that really.

In the following discussion, which also illustrates instrumental use of evidence, Beth explained that she was part of a team that compiled the evidence for the management of ruptured Achilles tendons which was then summarised and made available to the Department of Physiotherapy as an electronic guideline.

Beth:BR:543-562

Simon

So will there be a departmental guideline that has been written?

Beth

Yes that will hopefully put on the P drive so that all of the physios can [access it] then…if they have got a patient then...so I think it will be quite an easy and simple...the evidence that we have the do's the don'ts…

Simon

And then you will look at the guideline and use it in clinical practice?

Beth

Yep and then that will be given to the department…

The *conceptual utilisation* of evidence is perhaps the most abstract and least tangible methodological approach but it seemed to be the predominant way in which findings from evidence were applied in practice by the participants. *Conceptual utilisation* focuses on how evidence informs thinking and results in a change in an individual's internal frame of reference (Sandelowski 2004).

“Enlightenment” as a result of understanding and assimilating evidence occurs through reflection. *Conceptual utilisation* of evidence is abstract and the use of evidence to inform thinking is not directly observable; however, a change in thinking may lead to a change in actions that are observable within the clinical environment.

John had been qualified for five years and, at the time of the interview, was studying for an MSc in Manual Therapy. As a band 6 physiotherapist in musculo-skeletal outpatients he was responsible for delivering specialised care, teaching student physiotherapists on placement and, more recently, for writing competency documents for junior band 5 physiotherapists and physiotherapy technical instructors. In the comments below John discussed how he valued his clinical experiences and those of senior members of his team as a valid and authentic source of evidence. He explained how he reflected and assimilated findings from “evidence” to inform his ***thinking*** and action, an example of *conceptual utilisation*.

> ***John:JD:209-259***
>
> *I think it's a little bit more tricky, because in a way if someone is a little bit more experienced than you, you should just accept what they are saying, because they have been doing it a lot longer than I have and it obviously works for them so maybe I should accept it. But I think when they say things to me I test it against my own thoughts and how I understand things. So I may have to go away and check what I was thinking was right, and decide where it fits in with what they have told me, and if my baseline thinking was wrong then I perhaps will be a little bit more willing to change my thinking.*

In a related conversation he discussed the value of quantitative and qualitative research as types of evidence (John’s preference is for the former). What is apparent in this discussion is how reading evidence changed his understanding and thinking.

> ***John:JD:570-590***
>
> ***Simon***
>
> *OK we talked about different sources of evidence, have you ever used qualitative evidence in your practice?*
>
> ***John***
>
> *Not so much no, a lot of the research that I have looked at has been more quantitative. I certainly think it's because it's the way it follows in outpatients. Research, the stuff that I am normally interested in tends to be quantitative. I did look at some of it for the back class*

and chronic pain, there has been some qualitative studies into those sorts of areas and I've read a few of those… the majority of those tends to be quantitative.

Simon

And did those qualitative studies that you use in your department affect the way you treated your patients?

John

*…I think with the Master's stuff I've certainly been using more qualitative research and I think I'm getting more of an understanding of qualitative processes**. But it actually hasn't changed my clinical habits but it has certainly changed the way I understand things.***

The third way in which evidence was utilised was *symbolically*, but this was less evident in the participants' interviews than the previous two approaches. Symbolic use of evidence acts as a persuasive or political tool that affects change, usually in terms of justifying service delivery or improvement (Sandelowski 2004). In short, evidence is used to justify what policy makers want to do (Rosenström 2006).

Below Pat discussed how she used evidence to commission stroke services and demonstrating clinical effectiveness was a key driver for procuring funding. She explained that she was involved with a national stroke improvement programme that looked at effective treatment and service delivery.

Pat:PM:162-168

…effectiveness of practice is one of the key drivers and I'm involved in the stroke improvement programme nationally which is creating the evidence base for community based early supportive discharge teams for stroke services…

She also described the importance of using patient experiences of treatment and stroke services to help design services for the future.

Pat:PM:202-206

But actually when you canvass patient experience, it is overwhelmingly that they would prefer to be at home. They feel more inspired by the environment. Triangulating that evidence with current anecdotal patient experience has been really useful to help design a service for the future.

Based on the evidence available to her Pat created a business case as a persuasive political tool to secure funding from a board of commissioners, an illustration of *symbolic use* of evidence.

Pat:PM:219-214

The clinicians will read and eventfully write the business case and give hard evidence and critique…so when I actually go to present this to get the money [from] the board of commissioners I am confident in the evidence that they have presented…

Interestingly, she is also in a position that allows her to create evidence to be used in a symbolic way to support a case for securing funding for the development of stroke services. In the following discussion she explains how a university has been commissioned to design a study to explore patient experiences to support service improvement plans.

Pat:PM:272-281

We've actually commissioned an academic institution to do it for us, so the bias is taken away. Interestingly the clinicians are very excited about doing that evaluation or research, but for me, now taking more of a business approach, actually this would then be a metric behind how we commission in the future, so we needed to take that bias out very early…there is a specific selection criterion and there will be semi-structured interviews with the patient and the carer, to try and get both sides of the service delivery and improvement….

This chapter has outlined how each individual has had unique practice experiences and has different beliefs about physiotherapy and EBP. Each individual holds a personal theory of EBP which comprises an ontological perspective, an epistemological framework and a methodological approach. In this chapter individual experiences have been presented to support and justify the theme of "a personal theory of evidence based practice".

Chapter 5:

Theme 2: Translating Evidence into Practice

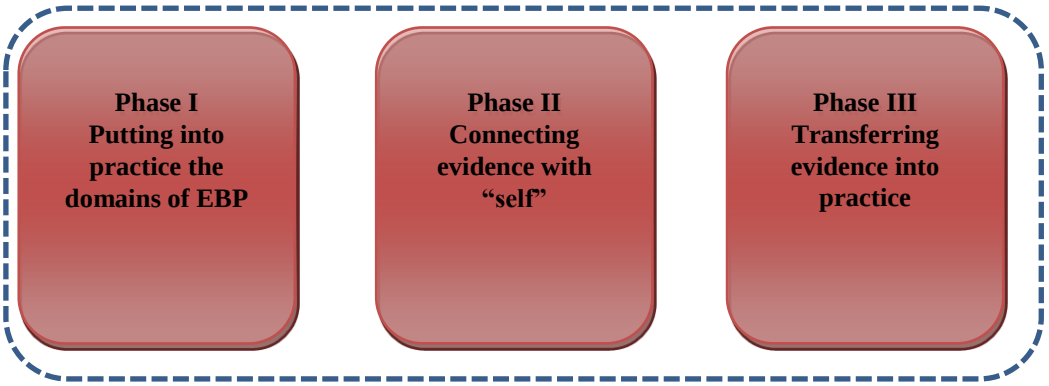
The Sicily Statement, as discussed in the literature review, described and explained the skill domains necessary to perform EBP. The skill domains are presented as stages and form the method of EBP as outlined below.

1. Translation of uncertainty into an answerable question.
2. Systematic retrieval of best evidence available.
3. Critical appraisal of evidence for validity, clinical relevance, and applicability.
4. Application of results in practice.
5. Evaluation of performance.

(Dawes et al. 2005:3)

This chapter presents the second major theme for this study and describes how participants translated and put into practice the findings from evidence. Chapter 4 presented personal theories of EBP whereas this chapter presents its application or use. Experiences were explored to identify their "conscious" actions of implementing and doing EBP. I asked questions that allowed participants to reflect on their knowledge in an attempt to understand how they "connected with" and implemented the method of EBP. Three overlapping and integrated phases were identified and Figure 5.1 summarises how participants translated evidence into practice.

Figure 5.1: Theme 2: Translating Evidence into Practice



Phase I represents how participants put into practice the different knowledge and skill domains of EBP; selected discussions and experiences are used to illustrate how participants constructed clinically focused questions, searched the literature and critically appraised evidence. Phase II represents the consequence of putting into practice the different skill domains and focuses on the importance of critical appraisal. This phase represents how critical appraisal enabled participants to connect evidence (at a cognitive level) with their personal knowledge base in preparation for clinical decision making. Phase III represents how findings and recommendations, from the evidence, are transferred into practice itself. These three phases are the essential elements of this theme and represent how participants translated findings and recommendations from the "paper" and applied them "to the patient". These three phases are used to help structure the content of this chapter.

Phase I: Constructing Clinically Focused Questions and Literature Searching

The skill domains of formulating a question and literature searching were discussed and described by the participants but were not the key focus of their evidence based practice activity. For some participants developing clearly focused and answerable questions did not form part of their approach or their knowledge was limited.

> ***Lesley:LM:1139-1148***
>
> ***Simon***
>
> *Which nicely leads onto my last two questions…do you still use PICO at all?*
>
> ***Lesley***
>
> *No… I tend to just do a general search to start with the example if I wanted to look at an intervention so rather than saying that I want this particular patient population or this particular outcome measure, I do a general search so no I don't use it but I don't know why.*

And

> ***Beth:BR:250-257***
>
> *No not really but I suppose you do it automatically without even thinking. I used to actually write down PICO but to be honest I just tend to go online and type in quite a general search and see what comes up and then I see if I can try and find something…*

Matt and Sue, on the other hand, had limited or no recall of using PICO.

Matt:MC:693-701

Simon

Do you remember PICO?

Matt

I do now!

Simon

But it's something that you don't use

Matt

No, no not at all no. Erm but crikey I do remember it but yeah I suppose unless you're in the university where it is really with easy access to the databases…it has been hard.

And

Sue:SM:1062-1087

Simon

Do you remember PICO?

Sue

(Pause)...nooo!

Simon

Constructing answerable questions?

Sue

No.

Participants' descriptions of the domain of literature searching were a little more detailed compared with question construction although their descriptions were not complete. Most participants recognised the use of Boolean Operators and that different electronic databases were available to search. However, advanced search skills such as using controlled vocabulary terms such as Medical Subject Headings (MeSH terms) were not as well developed.

Beth:BR:296-299

I haven't been using them as such, a lot of it, I try and go on things like Google Scholar rather than the actual specific websites like I used to use at uni. It's just much easier to get access to those online.

And

Lesley:LM:1183-1185

Ahhh… yes yes, I can do basic one and I just have a scan to see what's available, and then you can go into your advanced searches and you can mess around with the AND and OR's, dates and ages and the different types of things to hone down your search.

And

Rhian:RH:934-949

Yes I use all of them and my AND's and my OR's and just try to build up the search so it is specific as it can be and then search.

Simon

Do you use MeSH terms when you search?

Rhian

Erm...I don't think so.

The above skills were discussed and described but not in great detail; however, when asked about critical appraisal this was by far the most extensively discussed skill domain and forms the majority of the analysis in this chapter.

Phase I: The Practice of Critical Appraisal

When participants described their experiences of EBP, their response focused on critical appraisal. For most participants the critical appraisal process was central to their discussion and represented the primary "action" of EBP. Critical appraisal was synonymous with EBP and formed a large proportion of their discussions.

Sue:SM:393-395

Having the time to do the research, find the articles, ***critically appraise them****, see if it meets your patient group as the vast majority of the time you find an article and you think great and it doesn't meet...*

Matt:MC:517-526

...so it's that analysis of the appraisal of the research that needs to be done...a fine skill and I think it is a fine skill that needs constantly self-appraising and whether you are truly appraising those articles if the methodology just doesn't just stack up then it is very difficult to draw any, you know, practice changing conclusions from it.

Kerrie:KK:310-312

But obviously going back to what we were taught from uni you were told you should always question other health professions' opinions rather than just going with it because we are an autonomous practitioner...

Participants had different approaches to the critical appraisal process: some used critical appraisal tools such as checklists whereas others had internalised the appraisal process and relied on their understandings of the concepts of appraisal to help them come to a conclusion about the validity of the research and worth of the evidence. Beth, for example, described her use of checklists to appraise evidence. She explained that it was something that she had been trained to do and she used critical appraisal checklists, in this case the CASP (Critical Appraisal Skills Programme) tool, to help her appraise and critique evidence such as that derived from RCTs. CASP provides resources and learning and development opportunities to support critical appraisal skills development in the UK (CASP 2013). In the following response Beth used the term "CASP tool" to describe an RCT appraisal checklist. This checklist is comprised of a set of questions that has been developed to help practitioners understand the validity and usefulness of this type of evidence (CASP 2013).

Beth:BR:192-201

Because that is something that is standard I think and has been trained into us and not to just read the article and actually analyse and see how good the article is.

Simon

And did you do that with the task you were given with the guidelines?

Beth

Yes, it's quite new to us that there is the new CASP tool that was shown during my placements so I used that which I find quite helpful it just gives me a summary.

She then explained how the critical appraisal tool was used to help structure the appraisal process and to help her summarise the value of evidence.

Beth:BR:315-332

I literally follow the ten questions, the step-by-step guide so I would tend to read it and highlight, what I feel is important information...erm...and after I have read it I will then go and use the CASP tool and just start from the beginning…the first thing you have to ask is

if there is a clear research question and is it appropriate and a couple of times if the answer is no I won't really bother to read the article and if I found and answered yes then I'll go through its step-by-step, because a lot of the time ***I won't understand and also remember all of the questions, but...yes that's helpful.***

Beth acknowledged that, as yet, she did not understand or completely remember all of the CASP tool questions indicating that the process had not been internalised, nor had all of the appraisal concepts been learnt. However, the method she used, literally following the ten question step by step guide, was efficient and precise in that important appraisal concepts were applied as determined by the CASP tool.

Sue also used "checklists" to determine the value of evidence; in this case the appraisal process took place within her team as well as on an individual basis. At the time of the interview Sue was working in a West Midlands Rehabilitation Hospital as a band 6 neurological physiotherapist, specifically in elderly rehabilitation. In the following response she explained how she and her team used critical appraisal tools and checklists to investigate the effectiveness of interventions relating to stroke care. In the description below Sue described analysing the use of night splints to increase and maintain range of movement at the ankle compared with the use of a tilt table. In this discussion the appraisal process was very much a team effort.

Sue:SM:505-538

Simon

So as a group, in your team you all had a look at this article...

Sue

Where I am now we do journal club once a month so if each team takes in turn to bring an article to the table and we critically appraise it we go through it and we see what we can take from it…

Simon

On your own... or as a group... did you critically appraise that?

Sue

Yes ***we*** *critically appraised that… what we do, we send it out a couple of weeks before, everybody reads it. We use critical appraisal tools, the ones that we used when we were here at university, and we go through it and then when we are at the meeting whoever's*

turn it is leads it and we go through it and everyone puts their point of view across, and we'll say is this good and what about this and debate and see what we can take from it, we read further articles about it before we decide anything and go from there really.

Sue explained that critical appraisal checklists were used as a "prompt" to help her remember important concepts. She recognised that some areas of her understanding were limited, especially in the area of statistics, so checklists helped her to appraise and understand the value of evidence.

Sue:SM:541-562

Simon

How did you go about critically appraising the article?

Sue

Went through the critical appraisal tool, does it do this, and I find that quite useful, using that because at least it's a sort of prompt. I know we were taught it but remembering to do it, I'm fine going through the initial bit of the methodology and whether it's repeatable and all those things and then I get onto the statistics and that's where I struggle…there are so many different tests…you just think I really don't know what that is showing. I think as a department…it takes ***all of us to pick it apart…***

Similar to Beth, the checklist tool was central to the appraisal process and provided Sue, and her team, with structure. The concepts that surrounded the appraisal process did not seem to be internalised or remembered and some areas were not completely understood.

Kerry demonstrated a different approach to appraisal compared with Beth and Sue. At the time of her interview she had been qualified for five years and worked in a West Midlands University Hospital Trust. She was working as a band 7 specialist physiotherapist in musculo-skeletal outpatients with a special interest in acupuncture. Kerry's descriptions of critical appraisal demonstrated an approach that had been learnt; she used her knowledge of appraisal and research concepts to help her understand the validity and usefulness of evidence.

Kerry:KM:322-330

Simon

If you have an RCT in front of you how do you go about actually reading it?

Kerry

I would scan through the abstract first of all to see if it was interesting and relevant and whether it was worth reading…and then I will probably go to the conclusion and have a scan through that and then I would read it in more detail. If I thought it was going to be relevant or appropriate for me to read. And in my head I would then pick apart the methodology a little bit.

In the above response Kerry demonstrated that she had developed a method to help her analyse evidence and research papers. She read the abstract and conclusion to see if the paper, at face value, was of worth for her. If the paper had value she then proceeded to analyse the methods using her understanding of the appraisal process. She stated she would pick apart the methodology from within her "head" indicating that the concepts surrounding appraisal had been learnt. Her internalised understanding of appraisal is demonstrated in the following response.

Kerry:KM:332-343

One of the things that I look for is numbers so is it sort of applicable clinically to the wider population and have they done a power calculation sort of thing. ***I would look at their methodology, is it rigorous and relevant*** *to what they have done, have [they]* ***accounted for variables that could skew the results…***

Unlike Sue and Beth's approach, Kerry seemed to demonstrate more of understanding of the appraisal principles and applied her knowledge and understanding when she read and evaluated evidence.

In the following interview excerpt Kerry explained that to improve her ability to appraise, to increase the precision of the appraisal of evidence, she used checklists, especially when there was a formal requirement to analyse and understand the validity of evidence. She also re-affirmed that when she read articles she used her knowledge and understandings in a conscious way to evaluate evidence. She believed that the process of appraisal had been drummed into her and she had appraised evidence so many times that it had been learnt and had become part of her thinking. She also recognised that formal appraisal, using checklists, reinforced her understandings of the appraisal process.

Kerry:KM:346-407

Simon

So when you are reading and critically appraising it are you using knowledge from inside your head and then applying it to that paper as you are reading through it?

Kerry

Yes, unless I was doing it formally, for example if I was doing it for an article or for a piece of work that I was doing at Master's, then I would do it formally because I have got a list of points, you know I have a checklist... but if I was just reading an article I would use that list that is in my head.

Simon

OK so when you are reading an article are you conscious of thinking about the methodology…as you read the methods section are you conscious of thinking "well this aspect is particularly good or this aspect is particularly poor"...or do you just get a feeling for it as you read through it?

Kerry

When I read it for the first time I read through the methodology and I think to myself that they haven't used enough numbers or the groups aren't homogenous yes I would go through it like that in my head rather than just getting a feeling for it because then if I did that I don't think I would be able to write so much.

Simon

I'm just trying to understand how you critically appraise, when you are reading the article when you critically appraise are you conscious of doing it inside your head?

Kerry

Yes because…I think it gets drummed into you at so many stages in your working life [that] you know how to critically appraise an article [and] you do have checklists in your head that you work through.

Simon

So it's part of you now and it's been internalised within you...

Kerry

Yeah

Simon

When you critically appraise formally for your Master's do you sit down with a checklist and go through all the points?

Kerry

...yeah, I do things more thoroughly and there may be a few glaring points which are particularly strong points or the weak points of the study which I will focus on...but yes if I have a checklist it does make me do it more thoroughly.

In contrast, Lesley used multiple strategies in critically appraising the evidence. At the time of her interview Lesley had been qualified for five years and at this point she was training to become an extended scope practitioner (ESP). She was working as a band 7 spinal specialist physiotherapist in a West Midlands Foundation Trust Hospital. Lesley had management responsibilities for supervising and training a team of physiotherapists and as an ESP, within a spinal service, she was responsible for screening patients and referring them for investigations and listing them for surgery. In this discussion she explained how she critically appraised studies that investigated the reliability and validity of diagnostic tests: specifically, the accuracy of tests that diagnose sacroiliac joint dysfunction. When asked how she appraised evidence she initially talked about the use of checklists developed by CASP (2013) and SIGN (Scottish Intercollegiate Guidelines Network) (2014), an organisation that develops guidelines for the NHS.

Lesley:LM:521-535

Simon

Let's take something like Lazlett's paper, how did you go about critically appraising that paper?

Lesley

The last time I did it, because I've done it a few times, it was in the journal club, so because it's looking at the reliability of the tests I got hold of one of the critical appraisal papers and I produced a sheet with all the different sites that you can go onto with all the different critical appraisal tools like CASP and SIGN...so I just pulled one of those sheets went through it methodically...

I've got to the point now where I don't even need read the blurb, I know I need to go to these sections and look at it, I don't even need the outline anymore, but it's good because it keeps you structured and it makes sure that you are asking the right questions…

For Lesley the use of different checklists was central to the appraisal process: she recognised that, while she may not need to use them, they gave her structure. However, she also explained that she often found checklists inadequate and not fit for purpose and therefore, based on her knowledge and understandings, she developed her own. Applying her knowledge of appraisal was another strategy that she used to evaluate the worth of evidence.

Lesley:LM:543-547

…I found some of them have been a bit lacking*...but I think it gets you started...do you know what I mean? And once you've got that baseline you can then push yourself and start to look at other things…I've drawn up, I've created a few forms myself to appraise papers...so I use those as well.*

Simon

OK, so you said that you were critical of the critical appraisal tool?

Lesley

Yes (laugh)!

Lesley described another strategy that she used to improve the accuracy and precision of her analysis. Lesley checked her appraisal results with reviews from known centres of excellence such as the Centre of Reviews and Dissemination (previously known as DARE). This organisation appraises evidence and then publishes the findings for health care professionals to use. Lesley used appraisal findings from such organisations to confirm and support her analysis of evidence.

Lesley:LM:535-541

…I just use a CASP type of thing and went through it and then went into it in a little bit more detail… it's DARE at York where they do their own reviews of things… so I'll have a look and see what I have reviewed, does that match with these experts...am I on the right tracks…so I can check myself, that's what I tend to do.

Lesley also discussed an appraisal strategy that required her to have an open and accepting attitude. In the following discussion she explained that understanding evidence through the eyes of her peers also informed her thinking and understanding about the quality of evidence.

Lesley:LM:549-569

I might have seen things somewhere else that I might apply critically to that paper because I thought that I haven't looked at it at that angle and that's why it's good from the journal club point of view. Even with juniors and the students that come in, even though you're using this tool, people will use it differently and they will look at things differently so you get different ideas… so you need to keep your mind open to it…I think you need to keep an open mind to different things that might appear in it and look at the different angles that people might apply to it.

In this way Lesley used multiple strategies in her approach to appraising evidence. She consciously engaged with the appraisal process: she used checklists;

developed her own checklists; used colleagues' perspectives of appraised evidence to inform her understanding; and double checked her appraisal with acknowledged and expert sources.

Evidence based practice is a cognitive endeavour; it is a process of thinking that requires conscious thought and effort (Sackett et al. 2007). These participants used appraisal techniques that required conscious thought and active thinking either through the use of checklists or applying their learned understanding of appraisal. The process of appraisal for these participants was explicit, conscious and an active cognitive exercise. However, not all participants used such a conscious approach to appraisal; for some appraisal was tacit, automatic or even intuitive.

Fran had been qualified for seven years and graduated from Coventry University in 2003, she had been qualified the longest compared with the other participants. At the time of interview Fran was working as a band 7 physiotherapist working in elderly medicine and supervising a small team of physiotherapists; her work revolved around multi-disciplinary assessment and triage of elderly patients. She had worked in the same West Midlands Hospital for seven years. Fran's approach to appraisal of the evidence was not explicit and required some probing to understand. In the interview she reflected on her experiences which revealed an intuitive and internalised approach to critical appraisal.

In this first discussion she explained that she often sought advice from more experienced physiotherapists to help her manage patients with neurological conditions. She explained that she used her "*judgement*" to understand the validity of the information that she was given.

> ***Fran:FS:271-317***
>
> ***Simon***
>
> *OK could you give me an example where you have been critical of a source of information from another individual, or from another person?*
>
> ***Fran***
>
> *I suppose perhaps for me an area that I feel least confident in is neuro and we don't tend to get a lot of acute strokes…so there have been patients where I have sought advice…It's hard to give a specific example but I know there have been cases where a patient has presented in a certain way… so it's been speaking with other neuro physios and getting*

advice and information from them and I ***suppose in the sense of being critical then, maybe it's more of a using my own judgement*** *especially because they haven't seen the patient it's been more sort of verbal advice…*

In the next interview excerpt she described how she used evidence to help her make decisions about the management of patients with suspected deep vein thrombosis. In this discussion her reflections on practice indicated that she had an understanding of appraisal concepts but her approach was intuitive rather than an active and conscious process. Fran identified that she had a *sense*, or *feeling* or *awareness* about the quality and validity of evidence, indicating that intuition contributed to her critical appraisal skills.

Fran:FS:478-553

Simon

When you had a look at the research were you critical of that research? What did you do?

Fran

*I would like to say it was because I was taught so well (laugh). I suppose for me…****a lot of it is how well I feel it applies to my patient…****you know, thinking about, for example, when the research was done…and also things like the type of patient group that this may have been done with.*

Simon

When you read through the article are you conscious of things like small sample size, whether they have done randomisation at all? Are you conscious when you read that it's a good piece of research or not?

Fran

I think ***I'm aware of it,*** *I don't know, like I say, whether it shapes everything for me, I wouldn't discount something because I didn't feel that it hadn't used a big sample size. I suppose I feel more comfortable. So yes if I am reading through something I suppose it kind of comes down the quality of it and you feel more valued perhaps with something that has been done on a larger sample, because* ***you feel then there is*** *less chance of things just being due to chance…*

Simon

Right OK, but when you are reading through the methods and then get to a point like a sample size of 6 do you suddenly go inside your head ding…"yeah there is a small sample size"…or do you read through it and see a small sample size and it doesn't really register?

Fran

I think I would register it but I don't know if it has a significant effect on me. You know I ***think I'm aware of it****…I think it is partly due to having learnt to do that that…****I am now aware of it, I don't know I would have been aware of it but I don't know, I think, I think****. I suppose as a mental checklist I am crossing off things like sample size, like the type of study used, the methodology used, the environment that was used, perhaps even write things down; not that I am an expert in this but in terms of how the data is analysed and certainly the significance of the result, you know whether it is statistically significant as well erm. But I think, in all honesty,* ***I would look through that and be aware of these things****…*

In this way Fran's approach to critical appraisal was different to that of previous participants; her approach was not explicit nor did she make a conscious effort to appraise evidence. Instead she had developed a tacit understanding and intuitive approach that enabled her to see the value and worth of evidence for her practice. The interview enabled Fran to reflect on her experiences and understandings of EBP and she did acknowledge that she had been taught, or she had learnt about, the concepts of critical appraisal. Critical appraisal had become part of her way of thinking and her focus on feeling and intuition suggested that her knowledge had been internalised and had become tacit. This was indicated by her difficulty to fully articulate her method of critical appraisal and that it required a significant amount of reflection, on her part, to explain her approach. Practitioners find it difficult to explicate their tacit and automatic knowledge skills and behaviours and require a significant amount of reflection to raise their awareness of their actions (Donaghy and Morss 2000). However although Fran's approach was intuitive it did not come across as being detailed, precise or necessarily accurate compared with previous participants.

In summary, Phase I represents the putting into practice of the different skill domains of EBP. Critical appraisal seemed to be at the centre of, and was synonymous with, "EBP". Each participant demonstrated a different approach to appraisal. For some the process was a conscious action supported by their use of relevant checklists. For others, the process was more intuitive, relying on their knowledge and understanding, but was less precise in its application.

Phase II: Connecting with Evidence Based Practice

Individual experiences of doing evidence based practice in Phase I identified that participants used a variety of approaches for critical appraisal. Analysing their

reflections identified that there was more to this process than establishing the validity and worth of evidence. There was an additional benefit, in that the process of appraisal connected these individuals with the evidence and had an effect on their cognition. The appraisal process enabled critical understanding of the content of evidence (theory or practice) which subsequently informed their thinking and action. Higgs and Titchen (1995) explained that each individual has a store of "personal knowledge" into which other types of knowledge, such as knowledge from experience or knowledge from books, becomes incorporated. Higgs and Titchen (1995:528) and Wylde (1989:115) explained that it is only possible to use "*something*" that has been read or heard, if that "*something*" connects with an individual's own experience. For the study participants the "*act*" of critical appraisal was the mechanism by which they connected what they had "read or heard", that is from evidence (research papers or colleagues), with their personal knowledge. The act of critical appraisal enabled evidence to become incorporated into participants' knowledge base which subsequently altered or affected their views and values (internal frame of reference) in preparation for decision making. In the following section a selection of participant experiences are used to illustrate how the process of critical appraisal connected evidence with an individual's personal knowledge.

Kerrie had been qualified for five years and was self-employed working in the Home Counties. She worked as a private musculo-skeletal physiotherapist in two clinics; she also had a small portfolio of other jobs that included being a fitness instructor, a Pilates practitioner and a lecturer at a local college on Sports Therapy. In the following discussion Kerrie demonstrated that the act of critical appraisal connected evidence with her personal knowledge base and influenced her understandings and decisions.

First Kerrie set the scene and described how she used evidence to support the concept of Pilates during a job interview.

> ***Kerrie:KK:422-459***
>
> *I went along for an interview, it was for a GP job, I was only going to do two days a week and the GP wanted me there to teach exercise classes but to do specifically Pilates 'cos they had a lot of low back pain patients and they couldn't get into the main hospital…*

… luckily I did my undergraduate dissertation on Pilates and had not long done my clinical Pilates course, so I had brought all my little journal articles with [to the interview].

She explained that she critically appraised the articles using tools or checklists that she had been introduced to at university**.**

Kerrie:KK:505-510

Simon

How did you go about critically appraising the articles?

Kerrie

I used my sheet that uni gave us, you know the tool with the set questions and I just used that.

She then proceeded to describe the content of the appraised article. The article in question discussed the effectiveness of "abdominal hollowing", an exercise that activates a set of muscles that controls the stability of the spine.

Kerrie:KK:522-533

Richardson, if I remember rightly, did a clinically controlled, random controlled trial. They took a large cohort and they took one exercise which was abdominal hollowing on all fours. They validated that exercise from a previous paper that they had written…but also I'm sure…oh my God we going back years ago now...I'm sure they used other papers that had validated abdominal hollowing exercises because you could do it in sitting… but they chose to use it in all fours because…their diagnostic ultrasound machine around Transverse Abs could get a clearer picture when they were on all fours than when they were sitting. Gravity would get the patients to work their core much more easier so they measured their core stability beforehand with a bio pressure feedback…hence why I bought one in the end for my patients… because the inter-reliability study was really good for that modality.

She then confirmed that she had critically appraised the article and acknowledged that her understanding had been informed by the appraisal process and that the knowledge was in her "*brain*". This indicated that the action of appraisal connected the evidence with her personal knowledge base.

Kerrie:KK:563-583

Simon

OK so how many times have you critically appraised that article?

Kerrie

I did them all once.

Simon

How long ago was that roughly?

Kerrie

The ones we did at uni would have been in 2004, 2005. The four new ones I sat my [Pilates] exam in 2008.

Simon

OK...[they are] now part of your knowledge?

Kerrie

Yep it's in my brain yeah.

Simon

And you apply that now?

Kerrie

All the time!

On further questioning she explained that once evidence became part of her thinking it also became part of her clinical practice.

Kerrie:KK:584-594

Simon

When you treat your patients with abdominal hollowing and using the bio pressure feedback… are you conscious that you are using that information…or is it really an unconscious application of that knowledge from that paper to your patient?

Kerrie

I suppose I just do it, *I just get their assessment sheets out and say right this is what we're going to do today. The only time I do remember those papers is when another health professional kind of attacks me and says why do you do that? And then it will come back to my brain and say because of this paper that I read.*

To summarise, for Kerrie the critical appraisal process connected the evidence with her personal knowledge base. This act of critical appraisal was a conscious and active process. Once the evidence was integrated as knowledge her frame of

reference altered and the new knowledge was used to inform action. Over time this knowledge became implicit within her actions.

John's experiences also illustrated how the process of appraisal enabled evidence to connect with his personal knowledge. John recognised that evidence was of value if it was useful for him, and in the following discussion he focused on experiential evidence, that is, evidence derived from both peers and the literature. He explained that he was critical and sceptical of any form of evidence before he accepted it as useful in his practice.

> ***John:JD:171-176***
>
> *For me I like to ponder on things for a while, you know, I'll read an article think about it for a while and talk to people and see where it fits into what I am already doing, if it's something different to what I am already doing, try it, and see if it does make a difference, and if it does then I can properly say that I am using evidence to support what I do in terms of actually using hard evidence rather than just saying I tried it and it works.*
>
> *...*
>
> *I like to discuss things with other people and get other people's views on it as well but in the end I think the process comes from, yeah within my own mind I think.*

He then explained that he adopted a process whereby he checked new information (from appraised articles or appraised evidence shared by peers) with his current knowledge. He reflected and compared the validity of the new information with his own understandings, a different appraisal process compared with that of the use of checklists. Implicit in the following response is the notion that his critical approach, checking and validating the worth of experiential evidence, connected new information with his personal knowledge which changed his thinking and practice.

> ***John:JD:209-259***
>
> ***Simon***
>
> *So you've got a source of evidence from a journal and from experience and you go over it in your head and I suppose what you are saying is that you are critical of the evidence, that you have already said that you appraise journals, how do you go about being critical of the information that other people give you?*
>
> ***John***
>
> *(Laugh) I think it's a little bit more tricky, because in a way if someone is a little bit more experienced than you, you should, or perhaps in your mind should just accept what they*

are saying, because they have obviously been doing it a lot longer than I have and it obviously works for them so maybe I just should accept it. But I think when they say things to me I test it against my own thoughts and how I understand things because then they come from a completely different process in terms of actually how the patient's problem has come about to what I believe was the initial thing. So I may have to go away and check what I was thinking was right, and decide where it fits in with what they have told me, and if my baseline thinking was wrong then I perhaps will be a little bit more willing to change my thinking.

To summarise, the above discussions illustrate that the conscious process of appraisal using checklists or the intuitive appraisal process relying on learnt understanding enabled participants to connect evidence with their personal knowledge base.

Phase III: Transferring Evidence into Practice

Once evidence had been appraised and the findings connected with individual 'thinking' the findings were transferred into a meaningful decision or action. Phase III describes how participants considered the generalisability of the findings and how they applied evidence into practice.

When participants were asked how they applied evidence into practice they invariably discussed, and referred to, concepts around the notion of generalisability. In the context of this study the concept of generalisation was not clear other than as a process of transferring findings from evidence into clinical practice. Some participants described a process where they focused on the statistical characteristics of a study population and compared these characteristics with their patients. If the characteristics were similar then a treatment decision was made which later led to meaningful action; a process similar to the concepts described as the "external or statistical validity" of a research study (Polit and Beck 2010).

Other participants described an approach where they made inferences, based on reading and appraising evidence, about how findings might be extrapolated to other settings. As users of evidence they evaluated the extent to which the findings could be applied or transferred to their clinical practice, an approach not

dissimilar to the qualitative research concept of "*transferability*" (Polit and Beck 2010).

Overlap of these two approaches was apparent and participants tended to blend these concepts, making it difficult to separate them into two distinct approaches. Despite the "*blending*" of these concepts the process of transferring evidence into practice required participants to reflect on the "generalisability" of the evidence, on their clinical experience and knowledge, and on the current clinical situation. This process of reflection on these components enabled participants to make a judgement to "transfer" the evidence into clinical practice.

In the following example Helen described a situation where she had read evidence supporting exercise for shoulder instability. She explained that the participant characteristics in the study were not the same as the patients that she was treating. However, she reflected on the nature of the exercise and on the similarity between the two patient groups and made a decision to "*translate*" the findings into practice.

> ***Helen:HM:406-411***
> *You tend to find papers that were looking at post op rehab and that* ***is not my patient group****…so there things that you can translate across…****OK these guys post op*** *might have had post op instability,* ***my guy has got shoulder instability*** *and so* ***if these were exercises that were valid for that then it might be worth a shot with my guy****, if you see what I mean?*

Similarly, Pat described her involvement in the development of a national cardio-vascular and stroke risk assessment campaign. Pat discussed the value of three approaches for assessing risk, the Frammington calculator, QRisk and QRisk 2. She explained that the Frammington calculator was developed in the United States and did not take into account differences within different ethnic populations. Pat reflected on the applicability of the Frammington calculator based on how transferable the results were to a specific population. She used her clinical understanding and knowledge of the particular population she was interested in to make a decision about which assessment tool(s) to use.

> ***Pat:PM:434-446***
> *I was involved in critiquing national risk scoring programmes, so Framingham which is used in primary care to calculate the risk of stroke and cardio-vascular disease. And QRisk*

and QRisk2 which is the evolutionary development of cardio-vascular risk checking which has been rolled out nationally. ***The biggest issues around Framingham was that the original research was a cohort in America of interrelated patients and the study was not really transferable*** *and* ***didn't have ethnicity in it*** *and the biggest critique was that* ***how can we build risk without ethnicity****…So I suppose that all the time* ***when I am seeing anything about risk I'm thinking back about the critique of Framingham versus QRisk versus what's the transferability, what's the ethnicity coding…***

In a more complex example Sue explained how she applied a lycra splint to help reduce tone and improve mobility for an adult patient with a neurological condition. She explained that she reviewed, and was critical of, different types of evidence. She identified that research on the use of lycra splints was primarily conducted on children and, although the use of such splints was deemed to be effective, she argued that such results were not applicable to her patient. In this case she obtained further advice from peers and used her clinical judgement and experience, alongside the evidence from research studies, to make the decision to use the lycra splint. In this way she reflected on and evaluated the applicability of the results from studies; she reflected on the experiences of her peers and used her clinical judgement to make the decision to apply the splint to the patient.

Sue:SM:1240-1312

Simon

OK and when you have got that knowledge in your head, from experience, from members of staff and you apply it to the patient are you critical about using that knowledge in any way or is it just applied…?

Sue

I think ***you need to be selective of who it's going to be a benefit*** *for there's no point injecting everyone with a bit of spasticity. I had a patient that...he was walking and his spasticity in his quads was awful but I was quite convinced that if we injected it and took that away* ***he wouldn't be able to walk so we didn't inject him****. So…****weighing up the pros and cons and I think you can't just say well that's good so you can use it to everybody you've got to pick the right person****…everybody is different.*

Simon

Remind me again, did you look at research after that event?

Sue

I tried to see what was out there and there is very little…for adults, so I spoke to the paeds physio who said that sounds if it might be all right so give it a go. We got funding

approved…and it made a fantastic difference to him...we videoed him before and after, and the difference was amazing just simply by putting on this lycra splint. I thought I'd try to use evidence in this case but it was a stab in the dark I thought it might not work but it did.

Simon

When you looked at the evidence from the child am I right in saying that you read an article on it?

Sue

I looked at the literature I tried to see what was there for adults, I looked at a few abstracts and things…I did an overview and thought well actually ***my patient is not the same as that*** *so I can't say that that article would work because it's not the same as this patient, even from the abstract.*

Simon

So after you read the abstract you…

Sue

*…Yes…****it's not the same patient group so I thought I can't apply it but then talking with*** *clinicians who are experienced in it then we went down that line [lycra].*

Simon

…to summarise your thoughts… you looked at the abstract and the evidence…

Sue

Yeah..

Simon

…as one source of evidence and you did this automatic critical appraisal and thought that this wasn't the right patient group, you then also used another form of evidence in the form of clinical reasoning and your experience and your clinical expertise…

Sue

And I went to somebody else who also has expertise in this area.

Simon

And for you to make that decision you thought about all of that stuff and reflected on it and applied it to that particular patient?

Sue

Yep and we decided to give it a go, we explain to the patient that it might not work but it might not do anything at all but we think it might be worth a try and he was keen, and thankfully it did and it was very effective.

Simon

So in effect you reflected on all of those sources of information and knowledge to help you make a decision.

Sue

Yep!

The above discussions describe how reflecting on the generalisability of evidence, on the clinical situation and integrating these reflections with clinical experience, enabled the participants to make a judgement to "*transfer*" the evidence into clinical practice.

Once a clinical decision had been made participants then transformed the decision into a meaningful action. This involved participants practically applying the physiotherapeutic principles with their patients or in specific practice situations. Some participants explained they did this by "*having a go*" or "*having a bash*".

Sue:SM:1229-1232

Well with the clinical evidence side of things I suppose, if I try something and it works or if I try something and it goes horribly wrong I think I reflect my head quite a lot. Sometimes I sit and write it down, what was good what was bad, how am I going to take this forward? So it will go in my portfolio.

And

Helen:HM:584-595

Have a bash! And see if it works or not and sometimes certainly going back to the shoulder thing, I tried that with him and I got some reasonable results and I sort of tried it with other people…so I try it a bit and see how it goes and then if it's successful we'll add it in.

Kerry was more precise in her description of how she transferred evidence into practice and explained how she used published algorithms to help her apply assessment techniques. In the following conversation she explained that the use of an algorithm enabled her to apply a set of techniques to assess and diagnose problems with the sacroiliac joint.

Kerry:KM:638-705

Simon

…how do you get that information from the paper to the patient?

Kerry

I can think of one fairly big paper that did a study on SIJ tests…they did all the different tests and they came up with an algorithm, what tests you should use to rule in or rule out SIJ problems. They looked at the validity and reliability of each of the tests so I used that in my clinical practice…

…there are six special tests that you would use for the SIJ…I would certainly apply these six tests and see whether 3/6 apply, are positive which, as the paper would state, it would rule in SIJ as the source of the pain. So I have transferred into my clinical practice.

Participants explained that alongside the application of evidence they also evaluated the effectiveness of the intervention. In the following discussion Matt explained that once he had made a decision to apply a specific physiotherapy technique, in this case a specific cervical spine manipulation, he needed time to adjust and learn the motor skills to apply the technique effectively. He then explained that it was also necessary to evaluate the effectiveness of the intervention either through self-evaluation, feedback from patients or use of outcome measures.

Matt:MC:459-475

So if a piece of ***research suggests application of a technique*** *in a different way, there's got to be a transitional period where you* ***self-criticise*** *what you're doing and then…****a period to allow you to adjust to that new technique…****so if it is a cervical side glide…then it's going take a while* ***to learn those motor techniques*** *to apply that technique well.*

*So I suppose it's...****making sure there is more of you interpreting the research, applying the technique and then there has to be a review of it as well. So that the review of what you are doing and whether it has been as effective****. I suppose it's using outcome measures to ensure that what you are doing is more effective than what you were doing previously...so using peers and self-criticism and patient outcomes and clinical outcomes.*

On a final point participants also recognised that the process of appraisal and applying findings from evidence into practice had a carryover effect. Participants explained that once the evidence had been internalised, the memory of the

evidence could be recalled for later use. In the following example Rhian explained that she had treated many patients with low back pain and those treatments were based on her appraisal, understanding and application of findings from research evidence. Rhian explained that she reflected on her past experiences of appraisal and application of evidence which informed her decisions and actions in new or similar situations.

Rhian:RH:782-745

I've treated hundreds and hundreds of people with lower back pain and that must be having some sort of influence on my practice now and so I would imagine that it must be experience in utilising the evidence, the research and putting it into practice, although I'm not consciously thinking about it I must be at some level, be drawing on past experience from reading research and treating the patient.

Simon

OK whatever that evidence is, you've used it subconsciously with your patient here.

Rhian

Yeah

Simon

Further down the line a similar patient comes in, similar to that patient, it then triggers you to use the same technique again from the other patient. What you are doing is you are using that information from that patient to treat that other patient.

Rhian

Yeah. Once I've kind of done the evidence bit once, I kind of think I potentially know now who to use that particular evidence with. I suppose you do pick up patterns of who you think that evidence is meant to be used for or appropriate for.

Simon

…so the evidence that you use because you've applied it to practice...

Rhian

(over speaking)

…and seen it has worked, yeah and carry it on…

Simon

...then that knowledge becomes internalised and becomes part of your thinking…

Rhian

Yeah…

Simon

...and it becomes part of you and part of your practice…

Rhian

Yeah.

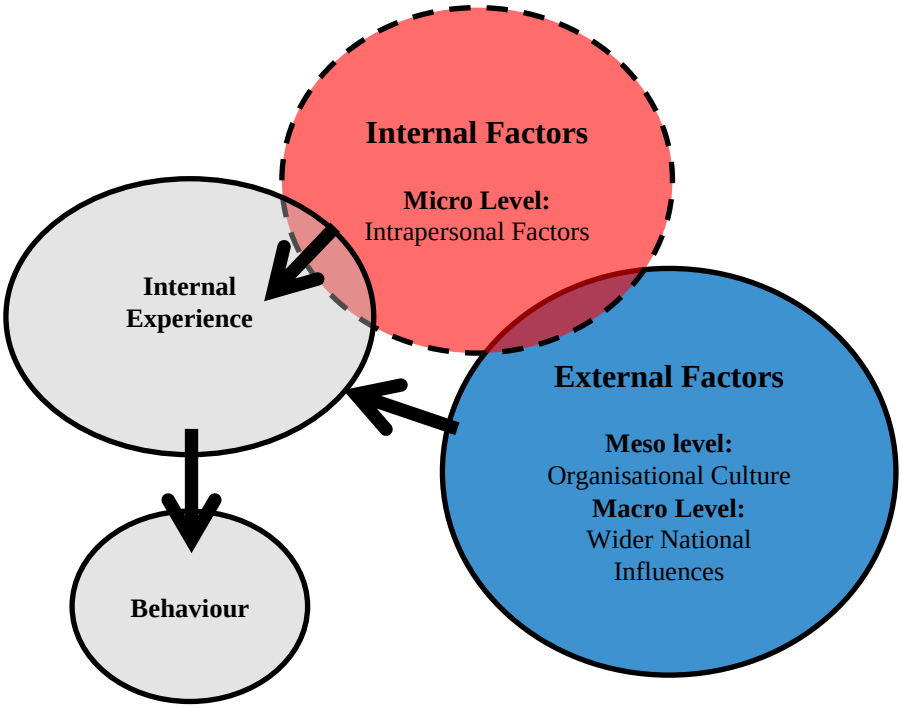
This chapter has outlined that participants equated critical appraisal with EBP and used checklists to help develop their appraisal ability. For some participants the use of internalised knowledge and intuition formed their appraisal approach and appraisal acted as a conduit which enabled them to connect the content of evidence with their consciousness and understandings. The next chapter develops the findings from Chapters 4 and 5 and explores the key influences that affect evidence based practice behaviour.

Chapter 6:

Theme 3: The Impact of Intrapersonal, Social and Cultural Milieus on EBP Behaviour

Phenomenology reminds us that a relationship occurs between what exists in "one's consciousness" and what exists in the "real objective world". The objective "world" is comprised of phenomena and these become "real" once they manifest themselves within an individual's consciousness. Fundamentally phenomenology seeks to uncover the internal consciousness of phenomena by describing and exploring the lived experience (Moustakas 1994:28). In the context of this study participants reflected on and described their internal experiences of phenomena that influenced their EBP behaviour. Evidence based practice behaviour can be thought of as a set of actions, thoughts or attitudes that reflect EBP theory and practice and such behaviour can be influenced by a range of factors. Figure 6.1 represents the key structure for this theme; it represents how internal factors that pertained to the individual and factors external to the individual influenced their experience of evidence based practice which subsequently affected their behaviour. This chapter will describe the key influences affecting EBP behaviour as described and reflected in participants' experiences.

Figure 6.1: Internal and External Factors Influencing Evidence Based Practice Behaviour



Internal Factors

The phenomenological interviews enabled participants to articulate a set of intrapersonal factors that affected their behaviour and action towards EBP. These intrapersonal factors were derived from "within" the individuals themselves. Because these factors were part of their internal experience of EBP and were important for "themselves", these intrapersonal factors were deemed to operate on a micro level, a level that pertained to the individual.

Intrapersonal Factor: "*The Need to Learn or Know*"

Most participants described, implicitly or explicitly, that "***to learn and to know***" about physiotherapy influenced their EBP behaviour. For example, Matt explained that his need to understand how physiotherapy techniques worked motivated him to read research.

> ***Matt:MC:225-235***
> *I mean OK...if something I do works but I don't know why it works, I just wanna find out why it works and again I don't know if it's the Master's that has brought it to the forefront*

more so that that makes me question it a little bit more or it's just always been there but just looking at my research files.

Kerry explained that whilst working in a particular physiotherapy specialty she could not see the value of a particular technique that colleagues used to treat and manage stroke patients. Kerry was motivated to search for, and read research, to inform her understanding and to confirm the validity and usefulness of a particular approach to care.

Kerry:KM:897-899

I just couldn't see the point in all this Bobath very strict stuff...so I think that triggered me to go and look at it in a little bit more detail...and found that there really wasn't very much evidence (laugh).

Kerry also explained that studying for a Master's degree promoted evidence based practice behaviour. Kerry explained that there was a requirement to critically evaluate and use evidence for coursework and assignments. This formal requirement to use evidence, as part of her professional development, was a key internal motivator that influenced her behaviour.

Kerry:KM:1157-1162

I think it's easier for me because I'm doing a Masters you start to think more critically because you have to appraise articles for your assignment so transfers into other areas of your practice.

Intrapersonal Factor: "*To Improve Performance*"

To know and to understand were not the only internal factors that promoted EBP behaviour. Participants also identified that the requirement to "***improve their performance or to do their job well***" were important intrinsic drivers and these are exemplified in Rhian, Helen and Fran's experiences.

Rhian:RH:1114-1147

…a lot of it is personal, I'm quite competitive and I have high standards of myself and that is my type of personality. So that definitely drives me because I don't want to be a substandard physio and I know of physios that get talked about behind their back because people don't deem them up to scratch and I don't want that to happen to me…

And

Helen:HM:939-948

Simon

…could I just ask you then what was the biggest driver? Marks or the fact you were helping with patient care or your learning?

(A long pause)

Helen

I don't know…probably all three. But probably…one of my biggest things was that I wanted to be a good physio.

And

Fran:FS:1060-1064

I suppose that's also to do with personal feelings too that ***you want to do your job well,*** *you want to learn more. I think I wouldn't want to feel that I just knew everything and that I wasn't prepared to take into account other things and like I say…I think the more you look into research and evidence, the more you learn and the more you want to keep looking in to it.*

Lesley's interpretation was somewhat different; evidence based practice helped her to question her clinical practice and subsequently impacted on her performance as a physiotherapist. When new evidence came to light she used this to change or modify her physiotherapeutic approach.

Lesley:LM:1045

…because it makes me carry on questioning my practice, for example evidence may introduce a new element of treatment or you may change the way you treat things slightly differently.

All the participants studied physiotherapy at Coventry University and frequently sat clinical reasoning examinations. These exams took place whilst students were on clinical placement and participants believed that if they critically discussed the use of evidence to support their clinical decisions then they would achieve higher marks. Achieving higher marks equated to a better degree classification so performing well was an important extrinsic intrapersonal motivator that promoted evidence based practice behaviour.

Kerrie:KK:1041-1045

Simon

Did you ever use it [EBP] in your clinical reasoning exam?

Kerrie

Yeah you always had to have articles and stuff because of course that gave you your higher marks.

And

John:JD:492-507

To do well! Marks, I think I want to be seen as being a good student so I think it was another personal driver I guess I wanted to be good at what I was doing so I think that makes you go away and look at things anyway…you were certainly judged how you did on the placement...so you made sure that you did your best and got a decent mark.

Intrapersonal Factor: "*The Need to Deliver Effective Patient Care*"

Participants described intrinsic factors such as self-development and improving personal performance as important intrapersonal influences but they also described extrinsic factors that affected their evidence based practice behaviour such as the need "*to do good by the patient*" and to be sure that they were "*delivering effective patient care*" as Lesley and Sue explain:

Lesley: LM:853-858

…when my educator said to me what are your objectives…I said well I want to get a high mark because to me that means my experience, my knowledge and my experience of evidence based practice means to me that everything has come together and that I'm doing the best thing I can for the patient…

And

Sue:SM:1360-1364

To benefit the patient really things are constantly changing, different ideas, different methods of treatment, we are constantly learning how the brain works, how people learn and all that sort of stuff, if you don't keep up-to-date with that then you're not giving the patient the best you can give them.

Intrapersonal factor: "*Knowledge, skills and attitudes"*

Although key drivers, such as the need to learn, to improve practice and to benefit patients were identified as key intrapersonal factors, participants recognised that their knowledge and attitudes affected their EBP behaviour. Most participants described their experiences of being a student and explained that developing clinical skills was more important than learning and putting into practice EBP, an attitude that precluded evidence based practice behaviour.

> ***Fran:FS:883-887***
> *Yeah well I guess I think it is hard to compare them really because I suppose when you are learning and you want to be a physio your focus is on learning the skills that you think you will need to be a physio… I think I could see the value of EBP but I probably ranked it lower…I probably felt I needed to get my hands on to learn the [physiotherapy] skills…*

And

> ***Sue:SM:836***
> *…whilst I was at uni I didn't really appreciate it, I just thought we really have to do this...*

Participants recognised that EBP knowledge and skills degraded with time especially around the skill domain of literature searching and article retrieval. This was compounded by the fact that the learning that took place at university was not reinforced once qualified and in clinical practice.

> ***Fran:FS:911-915***
> *EBP is the sort of thing you need to learn at university because if you haven't got the skills to learn it there, you don't learn it in clinical practice really. I don't feel since I've qualified there has been anyone…apart from refreshers literature searching where…we've actually been able to access anything to learn more about how to do it.*

And

> ***Kerry:KM:1020-1062***
> *I'm not very good at it to be honest I think it's one of my weaknesses, and I remember being able to do it at uni where you can combine the different searches that you have done, you know on like a Medline search. Recently I had to do it for a proposal and I should really go back again and learn how to combine those search terms and things, it's kind of there in the back of my mind but I can't remember how to use things like an asterisk and other random things that you can do.*

And

> ***Colin:KH:461-473***
>
> ***Simon***
>
> *…have you used articles that help you look at whether prophylactic physio actually works or not?*
>
> ***Colin***
>
> *I've looked for them but I haven't found any… Whether that's because I didn't look well enough or whether they don't exist.*

Intentionality, within the philosophy of phenomenology, is the internal experience where individuals are conscious about something (Moustakas 1994:28). In the context of the above discussion, the in depth interviews enabled participants to reflect and then articulate their conscious thoughts about factors that influenced their EBP behaviour. Participants reflected on their experiences and described intrapersonal factors that were important for them. This took place at a micro level, a level that pertained to the individual, and factors that influenced behaviour were either intrinsic in nature, such as the need to learn or know, and extrinsic in nature such as the need to deliver effective patient care.

External Factors

Participants described numerous external factors that could be categorised within two structures:

1. Meso level structures: organisational or social environmental factors that constrained or enabled the practice of EBP, and
2. Macro level influences: wider policy, national health and social care agendas that informed the practice of EBP (Figure 6.1).

Meso level factors: Time and Resource Implications

Participants reported numerous organisational constraints and factors that affected their EBP behaviour. Time seemed to be the ubiquitous factor that affected participants' abilities to search for literature and read and appraise articles. In reality, it was the many competing work pressures that prevented participants from having the time to engage with evidence based practice. As Pat and John explain,

there were not enough hours in the day to embrace an evidence based practice approach because of other work based priorities.

> ***Pat:PM:387-395***
>
> *No! In the end I didn't...I searched through the DOH website and in the end found the reference for the material so it was there but there wasn't enough time in the end to do that, and I think that this is one of the ethical issues in commissioning and that the roles are very time limited and getting dedicated time to critiquing research there probably isn't enough hours in the working day to add research into your programme of work.*

And

> ***John:JD:596-598***
>
> *Time! That's one of the bigger barriers, getting time set aside to do something is very difficult when you have got other things that you need to do…*

Sue, however, explained that time was a barrier but the organisation in which she worked recognised this as a constraint and set aside protected study time to support an evidence based practice culture.

> ***Sue:SM:1149-1153***
>
> *… I think time is the biggie, it's having the time and opportunity to sit, we were lucky as we have a journal club and we have that time set aside each week, we have in service one week and then the journal club the other.*

Kerrie also described the notion of "time" as an influencing factor but as related to the economic demands of clinical practice. Taking the time to do EBP in the clinical environment had financial implications in private practice.

> ***Kerrie:KK:641-655***
>
> *I thought about this shoulder person and I didn't know what was going on with them. I wanted to read up and find some articles but unfortunately I had a full day back to back with patients and only had a half hour break and I was aware that I was working from 9 till 7 that day…I'm sorry I've found that quite hard clinically when you're in practice. I know some places do set aside time for CPD and that is great…particularly in private practice… you've got an hour every day…But unfortunately in private practice…they see it is that they lose money if they're not working for that hour.*

Resource issues were also mentioned by participants, such as access to the internet and computers, but these were not discussed in detail. Interestingly,

however, participants did identify that their ability to retrieve important articles was an important barrier that affected behaviour. Articles were not always available or accessible online or the cost for retrieving articles was prohibitive.

> ***Sue:SM:1164-1164***
>
> *There are now more articles online although some of them you have to pay…so you have a cost implication which I'm not particularly willing to pay to get hold of literature…*

And

> ***Colin:KH:306-316***
>
> *Yeah, and that is where the problems come…here it's quite easy to look on the databases looking on Medline and using AMED and such, the problem then becomes… and even Google strangely, I find Google quite useful sometimes…you then get a list of articles…you can often get the abstracts for free but then we're not subscribed to a lot of those articles and being out of the NHS I don't have an Athens username and password, so I can't always access the full text.*

Meso level factors: Organisational Culture

Organisational culture is a complex concept and difficult to define but fundamentally it can be seen as the personality of the organisation (Brooks 2002). An organisation's personality comprises numerous components, such as social and power structures, policies, systems and procedures (Johnson 1999:72).These components influence how individuals perform and work within their organisation; thus the organisational culture determines how individuals act and behave (Brooks 2002). Within the context of this study the organisational culture influenced and affected individual evidence based practice behaviour; for example, Fran and Kerry identified how a culture of "*power and authority*", inherent within their organisation, impacted on their thoughts and actions.

> ***Fran:FS:337-414***
>
> *I spoke to the doctors and I told them what I had found and I suppose it was more of a discussion about, about what I had found and what they had been taught. I mean you do get sense in the NHS sometimes that the person who says things the most firmly is the person that's believed even you know whether they have got the evidence to back it up or not…*

Similarly, Kerry explained how the beliefs of senior and influential colleagues motivated her to use EBP to support her clinical practice. In the following account she explained that a colleague's views about how low back pain should be managed conflicted with her professional judgement. Despite pressure to conform to the colleague's recommendations she continued to use acupuncture for the management of low back pain. She was aware that her practice may be challenged but was confident that evidence was available to support her clinical decision.

> ***Kerry:KM:464-473***
>
> *…fairly recently I've had a patient whose got a chronic low back pain, you can't pin it down to a certain structure, she's had MRI scans and they haven't really shown much wrong, nevertheless though she's got low back pain and in our department there is a bit of a culture. Because the back pain specialists, has certain beliefs where if you have someone in that situation and they've got a chronic pain and central sensitisation, you shouldn't be hands-on you shouldn't give them active treatment… so I've used acupuncture in that situation and the evidence is there to back it up if that was challenged.*

Lesley explained that pressure from peers also affected her EBP behaviour. In the following discussion she explained that she supervised undergraduate and postgraduate students and they often challenged her clinical judgement. Knowing that her clinical decisions would come under scrutiny from her peers was an important factor that motivated her to engage and keep up to date with evidence.

> ***Lesley:LM:748-756***
>
> *…we have postgraduate students coming in and when they are coming out they get questioned to within an inch of their life and I have got to know the evidence for everything that they are doing… I just feel happy with it…*

The organisational culture frequently involves multiple departmental systems and structures that include local policies, departmental practices and "rules" that are written or unwritten. These influenced and affected individual evidence based practice behaviour. By far the most reported system that promoted a supportive evidence based practice environment was the use of a journal club. Journal clubs are usually formally arranged departmental meetings where physiotherapists critically evaluate academic and clinical practice articles of interest.

Helen:HM:508-503

Yes and we do journal club sort of different places, do it at different times; certainly at the moment we are doing it every month and because of Sheila's [pseudonym] increased insight in having done all this BTS stuff. We then, as groups, take it away and appraise it yourself and then come back and discuss it. And then as a group we kind of label it as to what level of evidence we would rate it and how much notice we are going to take.

And

Beth:BR:789-790

Like I say, on my placements I was involved in journal clubs and things, so that was nice and that kept it ticking over in my head,

And

Sue:SM:1149-1151

I think time is the biggie, it's having the time and opportunity to sit, we were lucky as we have a journal club and we have that time set aside each week, we have in service one week and then the journal club the other.

Differences across departments and disciplines also determined if a nurturing evidence based practice culture existed. Lesley explained that different physiotherapy departments had different views about the value of EBP which subsequently influenced her practice.

Lesley:LM:890-894

Although I think that differs massively between different departments, so when I've done these presentations for the main in service, the seniors have come to me, we are not doing anything, we don't look at any of the evidence, not for neuro, or the respiratory lot they say that there isn't very much evidence and I say well yes there is some, it doesn't matter what it is you can still find and look at it, so I think that there are massive inequalities across the different disciplines.

Politico-economic factors within the organisation also influenced EBP behaviour. Participants described that there was a requirement to develop, support or defend service delivery with the use of evidence. Fran explained that in her area of work, care of the elderly, there was a perceived pressure to reduce the length of hospital stay. She explained that in her opinion neglecting different forms of evidence, such as patient experiences of elderly care services, could result in inappropriate decisions being made.

Fran:FS:742-748

…like I say, in the health service at the moment, especially in the hospital that I work in it feels like there is a big emphasis on the length of stay. We have been told our length of stay is too long we need to cut it down and I think if you exclude some of that qualitative information that you have got about patients perceptions then perhaps you are missing the whole picture and you can get very focused on one thing…

Similarly, getting research into practice and making research more accessible for commissioning organisations was an important politico-economic driver for Pat.

Pat:PM:340-349

…and I think the more we embed this ethos of research into commissioning organisations then we should get more robust action research happening that can actually improve the health economy, as a whole so that is a bit of a crusade I guess for me.

Participants discussed the transition from being a student to becoming a qualified physiotherapist and how this influenced their EBP behaviour. Participants explained that becoming a qualified physiotherapist prevented them from searching, reading and appraising articles. This was attributed to the fact that there were numerous competing work pressures. For example, being a student required participants to engage with EBP, time and resources were available and it was expected behaviour. On qualifying students entered a different culture where, in some cases, the experience of becoming a junior and everything that was required of them was not conducive to putting into practice EBP.

Rhian:RH:573-594

Probably because I was floundering [with EBP] to begin with (laugh), I think when I first started I was more worried about getting the patient in…seeing them in the timeframes and getting all your notes done and all the practical aspects…

And

John:JD:337-343

I think when I'd just qualified and started working, I don't think I read any articles for a while, I think there was enough going on otherwise to not really bother about articles at that point, and then as I got more settled I started to do more reading and appraising a little bit more.

However if EBP was embedded within the culture of the department, participants took an active role. Beth explained that within the first month of qualifying she was

given tasks to appraise articles and help develop departmental guidelines: EBP was a formal departmental responsibility and a key driver for her to continue to engage with EBP.

> ***Beth:BR:106-115***
> *I was involved in a clinical effectiveness project where we basically were reviewing and analysing the British Thoracic Society guidelines for spontaneously breathing adults...so there was about five, two band sixes in my group… I chose bronchiectasis and how that's managed...and the BTS guidelines basically summarise a lot of the research out there and we were going to try and compare to see if [our] hospital comply with the treatment that they recommend.*

Macro Influences on Behaviour

Wider national initiatives that included statutory requirements to undertake continuing professional development, legal frameworks and the publication of national practice guidelines impacted on individuals' EBP behaviour and often overlapped with intrapersonal and organisational culture factors.

Physiotherapists have a statutory requirement to register with the Health Care Professions Council (HCPC). To maintain registration physiotherapists are required to sign a declaration of continuing professional development (CPD) which is defined as "*a range of learning activities through which health and care professionals maintain and develop throughout their career to ensure that they retain their capacity to practice safely, effectively and legally within their evolving scope of practice*" (HCPC 2014:1). Participants identified that this statutory responsibility promoted evidence based practice behaviour.

> ***Kerry:KM:812-819***
> *I did remember that I found it useful for interviewing for junior jobs and also for building up my CPD file and that sort of thing.*

And

> ***Matt:MC:192-196***
> *...again I think I have been lucky with the Trusts that I've worked in, where they have been evidence based, evidence based and looking at clinical governance work looking at clinical governance work books and whatever we do has to be in the clinical governance work books and that work allows us to do what we need to do and allows us to practise the ways we should be practising.*

And

> ***Kerrie:KK:664-665***
> *And I think well hang on a minute you've got to do that for you, especially when our HPC registration come up as well.*

Participants also briefly discussed EBP in relation to the legal context and requirements of practice:

> ***Beth:BR:830-832***
> *Yes legally and in terms of you being qualified physio, there's always that that you need to prove that you are doing evidence based practice, it is seen that you are constantly updating yourself.*

And

> ***Lesley:LM:270-271***
> *...so from a legal point of view it's necessary, from my professional point of view it's necessary.*

The use of national guidelines was identified as an important influence on practice by the participants, in particular the National Institute of Clinical Excellence (NICE) guidelines. Matt described a situation where, at the meso level, managers decided to withdraw a pain clinic service. The decision to withdraw acupuncture from this service was based on the paucity of evidence relating to its effectiveness. However, NICE guidelines were published soon after that recommended the use of acupuncture for pain relief. This macro level recommendation was deemed to be a valid source of evidence for Health Care Commissioners and subsequently acupuncture was reinstated as a bona fide method of treatment.

> ***Matt:MC:405-412***
> *Yeah obviously when as something as big as the NICE guidelines come out that can be very departmental changing, at the time that the NICE guidelines came out my trust at the time had been forced to stop practising acupuncture because the commissioners wanted us to prove what acupuncture did and it was very hard to have definite medical evidence of what it does.*

As soon as the NICE guidelines came out they let us practise acupuncture because it was in the NICE guidelines, so in that situation it was easy because you know, we all wanted to practise it but we weren't allowed to so.

In contrast, participants indicated that, in spite of the NICE guidelines and their willingness to implement evidence based recommendations, meso level resource implications often proved a barrier to EBP.

Kerry:KM:445-455

…if you took the guidelines literally you would have patients on your case load, every single chronic low back pain patient, which really is the mainstay of our caseload, especially in back pain, you will be treating every single one of them with a course of ten manual therapy sessions, ten acupuncture sessions and a group class and possibly a psychology referral which means you would have most patients on your caseload for about 20 sessions which just isn't practical in the NHS setting.

And

Matt:MC:393-401

So if you've got current clinical NICE Guidelines on chronic low back pain, patients should receive set treatments and then 100 hours of cognitive behavioural therapy (laugh) that's not gonna happen in anyway unless you've got an in house pain cognitive programme…

In summary, participants were conscious of external factors that influenced and affected participants' ability to engage with EBP, meso factors such as power and organisational culture influenced behaviour along with wider macro issues such as CPD requirements and the impact and feasibility of the use of NICE guidelines.

Chapter 7:
Discussion of the Findings

Introduction

The purpose of this study was to establish if and how physiotherapists practise EBP. Literature suggests that despite efforts to teach and promote EBP it is often not used and raises questions about its value and worth (Kloda and Bartlett 2009). The findings from this study indicated that physiotherapists that had undergone formal education, within an undergraduate programme of study, did practise a form of EBP. Findings indicate that physiotherapists had developed a theoretical and practice framework that guides their behaviour. This framework is uniquely individual (Theme 1); it is not just about individuals' identifying relevant evidence and integrating it into practice, it required a complex set of cognitive processes that included knowledge identification, transformation, translation and implementation in specific client situations and practice contexts (Theme 2); and to add to this complexity this framework took place within a social and cultural milieu which influenced behaviour (Theme 3).

By investigating the aims of this study and answering the research question, "*What is the essential structure (essence) of practising EBP from the perspective of physiotherapists?*" essences or discrete units of meaning were consolidated into three separate but interrelated themes:

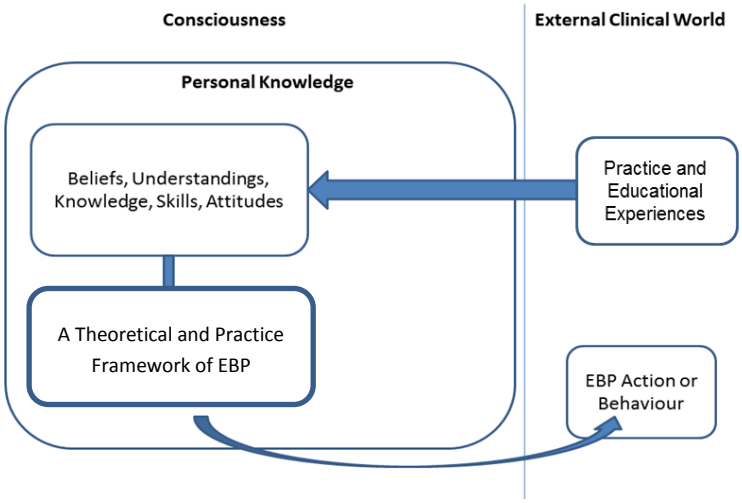
1. A personal theory of EBP
2. Translating evidence in to practice
3. The impact of intrapersonal, social and cultural milieus on EBP behaviour

A summary of these themes, essences and the interconnectedness between them is presented as the "essential structure of practising EBP". The essential structure, in its complete form, can be found in Appendix X and is presented in this discussion alongside associated theory, literature and research. Few studies were found that specifically explored individual experiences of EBP and this makes it challenging to situate and discuss the relevance of these findings with similar studies; nonetheless the findings will be contextualised with relevant and contemporary evidence based literature.

A Critical Discussion on the Essential Structure of EBP

The intention of this discussion is to critically review physiotherapists' experiences of EBP and compare this with espoused theory and practice in an attempt to identify tensions, gaps and confluences. EBP is predicated on a fundamental philosophical principle that promotes "*critical scientific and practical awareness of different types of therapeutic knowledge*". This is underpinned by a basic ethical premise that "*the use of such knowledge aims to improve health care interests for the general good and aims to avoid unnecessary harm to patients*" (Ashcroft 2004:131). The phenomenon of EBP is not a tangible product but a cognitive process that takes place within the consciousness of individuals (physiotherapists) leading to meaningful action in the external clinical world (Figure 7.1). Physiotherapists, in this study, had developed a set of beliefs, understandings, knowledge, skills and attitudes based on their education and practice experiences. These beliefs and understandings became incorporated into their personal knowledge base (personal understandings about the theory and practice of EBP) which shaped a theoretical and practice framework which guided their evidence based practice behaviour. The following discussion represents new insights as to how physiotherapists think about, reflect on and implement the fundamental principles of EBP.

Figure 7.1: A Developing Theoretical and Practice Framework



An Emerging Theoretical Practice Framework: Theme 1: A Personal Theory of EBP

Within an individual's theoretical framework of practice a personal theory of EBP existed that guided behaviour (Theme 1); physiotherapists had developed a working philosophy which underpinned the practice of EBP. Three different ontological perspectives of the reality of evidence based practice existed within their personal theory (Figure 7.2); and participants adopted a particular view depending on their personal set of beliefs and the clinical situations they encountered. One view revolved around the idea that, for the therapist, evidence was at the centre of the process. This evidence centred view of EBP acknowledged that evidence (for example RCTs or systematic reviews) was of primary importance. In essence, evidence was at the heart of EBP and it was "*all about the evidence*". The second ontological view revolved around the notion that the patient was of central importance to EBP; for the therapist, the reality of practising EBP was "*all about the patient*". The third perspective focused on the therapists themselves. From this perspective therapists were central to the EBP process and orchestrated the use of evidence for professional use. In this case EBP was "*all about the therapist".*

Physiotherapists had also developed an epistemological framework where different types of evidence had value. Evidence ranged from personal experience, patient experience and values, and colleagues' opinion through to the use of empirical studies such as qualitative research and evidence grounded in traditional hierarchies. Importantly, adopting a particular ontological perspective, albeit tacitly, influenced the type of evidence that physiotherapists considered for decision making. For example, if there was a need to determine treatment "effectiveness" then an evidence centred perspective dominated and evidence associated with traditional hierarchies took precedence over other sources of evidence. In this case systematic reviews and the ubiquitous RCT were deemed to be of prime importance. In contrast, if the needs of the patient were important then a patient centred view dominated leading to the selection of "any type of evidence" within a broad epistemological framework. In this example, evidence was deemed to be important if it held value for the patient. Evidence in this context was not limited to traditional hierarchies but wider sources of evidence were considered that included empirical research, physiotherapy theory as well as anecdotal accounts from

patients, carers and colleagues. If the evidence held value for the patient then a pragmatic decision was made to use it within the context of the clinical situation. Similarly, if the needs of the therapist were of prime importance, then a therapist centred view of the reality of EBP dominated and evidence was considered to be of use, and was selected, if it held value for the therapist. In this instance the therapist's preference for the choice of evidence was rooted in traditional hierarchies of evidence. Theory, qualitative research and experience were considered but were deemed to be of secondary importance.

The above findings represent new observations as to how physiotherapists practise EBP and have not been described in previous physiotherapy literature; however, similar findings have been identified in related areas of physiotherapy research. Thronquist (2001) observed that the characteristic ways in which physiotherapists think and practise is based on their perception of the value they hold of different types of knowledge for practice and this relates closely to the findings described above. Researchers have identified distinct categories of physiotherapist based on their approach to clinical practice, how they interact with clients and how they deliver treatment (Shaw, Connelly and Zecevic 2010). Lindquist et al. (2006), for example, studied the phenomenon of professional identity in a cohort of physiotherapy students who were reaching the end of their undergraduate education. Phenomenological methods were used to explore their perceptions of their role, practice, vision and beliefs, and three qualitatively different categories of professional identity emerged. Lindquist et al. (2006) hypothesised that physiotherapists align themselves with particular professional identity. This is based on their beliefs and conceptions about the type of knowledge that holds value for them and in turn guides their practice philosophy, a hypothesis that begins to explain an individual's personal theory and practice framework of EBP. The first of these professional identities describes physiotherapists who value patient perspectives and focus on enabling patients to participate in social activity; these are seen as the "***empowerers***". The second describes physiotherapists that focus on teaching the patient to achieve specific health care and social goals and are termed "***educators***". The third group of physiotherapists focus on professional knowledge leading to diagnoses and treatment of health related conditions and are known as "***treaters***". Edwards and Richardson (2008) make similar observations and explain that physiotherapists

have developed a practice epistemology, an individual's perspective on how they value knowledge, which guides their professional reasoning and practice. They explain that physiotherapists (within the context of clinical reasoning) align with a preferred knowledge type. They identified three different valuable paradigms of knowledge: the critical paradigm of knowledge, where the focus is on empowerment and emancipation; the interpretive paradigm, where knowledge is context dependant and socially constructed; and the scientific or positivist paradigm where objective and measurable observations are used to make generalisations about patient care; knowledge types have been discussed previously in Chapter 2.

Shaw et al. (2010) examined Lindquist et al.'s (2006) professional identify hypothesis and Edwards and Richardson's (2008) practice epistemology in some detail and identified that each of the professional identities is associated with a particular practice epistemology. For example "***treaters***" associate with formal knowledge or the scientific or positivist paradigm, whereas the "***empowerers***" and "***educators***" associate with practice and informal knowledge or the critical and interpretive paradigms of knowledge. This unification of Lindquist et al.'s (2006) "practice identity hypothesis" with Edwards and Richardson's (2008) "practice epistemology framework" compares with the findings in this study and further indicates that physiotherapists adopt an ontological perspective and align with a particular type of knowledge.

Furthermore, it was evident that the evidence type practitioners preferred was primarily associated with traditional hierarchies rooted in positivist or empirico-analytical paradigms. Pearson et al. (2007:85) suggest that the predominant view of EBP, as described in contemporary literature, "*focusses on searching for, appraising, and synthesizing the results of* ***experimental research*** *and transferring findings into practice to improve health care*". The epistemological stance that is seen as the predominant knowledge foundation for EBP is one that privileges the application of evidence derived from epidemiological studies in clinical practice; such studies are placed in order of importance in evidence hierarchies with the intention of informing clinicians (Ashcroft 2004). The rationale for using epidemiological and empirical research is based on numerous assumptions. First, epidemiological research is grounded in positivism, a paradigm that lays claim to having created the foundation for modern knowledge; it is

deemed to be the most formidable epistemic regime of truth and, for some, knowledge that sits outside this regime is not valid (Walker 2003). Subsequently evidence associated with positivism, the notion of objectivity and concrete observable facts, supports the view that the use of scientific knowledge improves patient care. Second, epidemiological studies and associated hierarchies of evidence are often deemed to be, methodologically speaking, the gold standard for determining clinical intervention effectiveness, and subsequently are seen as the preferential choice for health care (Walker 2003). Third, effective and efficient clinical intervention, grounded in epidemiological evidence, addresses the politico-economic agenda for effective and cost constrained health care (Pearson et al. 2006, Swinkells 2002). Evidence associated with this positivist paradigm and biomedical view of health care continues to be propagated as the dominant epistemological framework (Miles, Loughlin and Polychronis 2007, Tonelli 2006) and continues to underpin the teaching of EBP (Hatmi et al. 2010, Krainovich-Miller et al. 2009, Smith-Strøm and Nortvedt 2008). It stands to reason that if this philosophy predominates within the profession of physiotherapy, then physiotherapists will align with this epistemological framework; this begins to explain why participants in this study had a predisposition towards this type of evidence.

This is not to say that participants did not consider other knowledge paradigms within their personal theory; in fact some rejected the notion of the use of empirically based evidence in favour of experiential evidence especially when adopting a patient centred ontological view. Participants' choice and selection of different types of evidence resonates with the JBI conceptual model of evidence based health care as described in Chapter 2. The JBI model theorises that the type of evidence sought should reflect the clinician's situational needs and should focus on four major evidence interests: evidence of feasibility (F), the extent to which an activity is practical and practicable; evidence of appropriateness (A), the extent to which an activity or intervention fits with or is apt to fit in a situation; evidence of meaningfulness (M), the extent to which an intervention is positively experienced by the patient; and evidence of effectiveness (E), the extent to which an intervention is effective. Evidence in this model is conceptualised as "the basis of belief" and whether it is experience, empirical research, patient preferences or personal opinion, as long as it purports to be feasible, appropriate, meaningful or

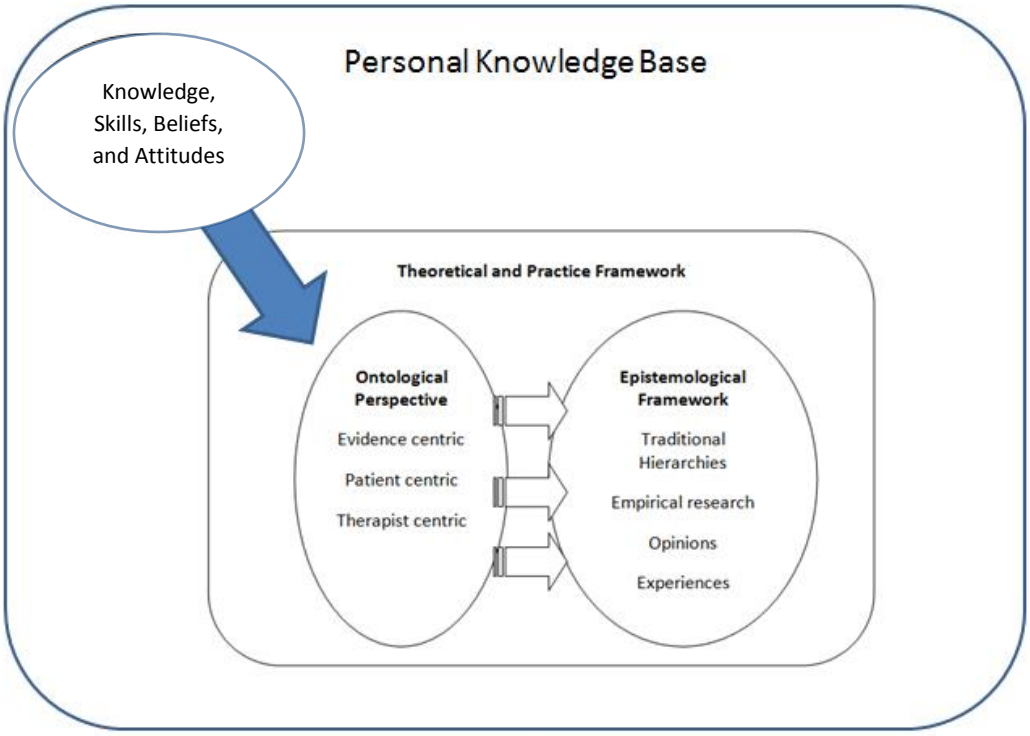
effective then it is theorised to be suitable (Pearson et al. 2007). It is not difficult to visualise how the JBI concept of FAME shows similarities with the ontological and epistemological observations in this study and subsequently the two ideas can be unified. For example when participants adopted a therapist-centric view then evidence was selected if it was deemed to be **appropriate** or **feasible**. Similarly when participants adopted a patient centric view then evidence was selected if it was **meaningful** for the patient. The JBI model is an important move away from use of evidence within narrowly defined evidence frameworks and offers a pragmatic solution for considering and selecting evidence. However, the model is a conceptual and theoretical representation, and at present is not underpinned by empirical observations other than those hypothesised in this study

Authors in EBP have also recognised the need for including multiple types of evidence derived from different knowledge paradigms and suggest that using such narrowly defined evidence frameworks to ensure that clinical decisions are based upon aggregate, population derived data is fundamentally flawed (Britten 2010). Harari (2001:729) agrees and proposes that traditional epistemological frameworks that rely on the power of empiricist principles to determine what constitutes reliable knowledge are misleading and misplaced; clinical trials and other experimental methods, as a source of evidence, are insufficient to explain the reality of clinical practice and decision making. Tonelli (1998:1235) agrees and argues that the epistemological reliance on the use of “clinical trials” (evidence within a positivist paradigm) creates an “epistemological and ethical gap” between research and practice. This is because the use of such knowledge demands a specific type of reasoning, one that requires empirical evidence to be applied scientifically, objectively and deductively, an approach that ignores or marginalises social and individual values (Maynard 1997). Jones et al. (2006) conceptualise physiotherapy patient problems as multifactorial: patients present with their own unique mix of social, psychological, cultural and physical factors and often with more than one source of impairment; other types and sources of knowledge should be considered to meet the complex needs of patients. This should include evidence from qualitative research, intuition, common sense, non-empirical evidence and patho-physiological theory (Britten 2010, Djulbegovic, Morris and Lyman 2000, French 2002, Tonelli 2006).

The findings from this study indicate that other types of evidence were considered within participants' personal theories of practice but, on occasion, with difficulty. For example participants identified that they considered the use of qualitative research and some identified how such research had been used to make decisions and change practice. However, for the most part, participants found the use of qualitative research challenging, they identified that it was difficult to use and difficult to understand. They explained that the language and concepts used in such research were complex and not clear cut and described qualitative research as "fluffy" or "woolly". Literature supports this observation and suggests that physiotherapists have difficulty understanding research (Jette et al. 2003). Funabashi (2012) in his narrative study identified that academic language was a significant barrier for knowledge exchange and transfer and made it difficult for physiotherapists to appraise, evaluate and integrate findings into practice. As a point of note, a recent survey investigating attitudes and knowledge of EBP, in a cohort of allied health professionals, identified that the degree of knowledge and understanding of research terms ranged from 78% to 40% (Heiwe et al. 2011). Interestingly, in this study, only terms associated with quantitative methods were presented to the participants, such as reliability and odds ratios; no qualitative terms were used within the study. This perhaps goes some way to explain the underutilisation of qualitative research within the culture of EBP where evidence is still deemed to be positivist in nature and opportunities for developing understandings in qualitative research may be limited. Further research is required to establish the nature of physiotherapists' understanding of qualitative research and its use and uptake into the clinical environment

In summary (Figure 7.2), as a consequence of education and practice experience, personal beliefs, knowledge, attitudes and the clinical context in which EBP took place individuals were predisposed towards a particular ontological perspective. The adopted ontological perspective acted as a lens by which evidence was viewed and then selected from an epistemological framework that consisted of experience through to the use of empirical research. The implications for these findings are discussed in the concluding statements of this thesis.

Figure 7.2: Ontological Perspectives Leading to the Selection of Evidence



Knowledge and Skill Domains in EBP: Theme 2: Transferring Evidence into Practice

Before evidence was applied and used in practice other important cognitive processes took place and related to the skill domains of acquiring, appraising and applying evidence (Theme 2). To be proficient and competent in evidence based practice physiotherapists need to have developed clinical information behaviour defined as a process whereby physiotherapists identify their information needs, decide whether or not to seek answers to these needs, engage in information-seeking behaviours, and then decide how to use information to improve patient care (Kloda and Bartlet 2009:194). Physiotherapists need to have developed a set of knowledge, skills and behaviours in “asking questions” and “acquiring evidence” to enable them to successfully meet their clinical information requirements (Ilic, Tepper and Misso 2012, Shaneyfelt et al. 2006b, Slavin 2004).

According to the traditional approach of evidence based practice clinicians should formulate clinical questions based on the presenting situation: this should enable them to identify their information requirements, resolve clinical uncertainty and give structure for searching and acquiring evidence (Davies 2011, Dawes et al.

2005). Clinical questions are structured using frameworks such as PICO (Population, Intervention, Comparison and Outcome) and SPICE (Setting, Perspective, Intervention, Comparison and Evaluation) (Davies 2011). These approaches for formulating questions represent an effective and efficient method for meeting individual clinical information needs (Slavin 2004, Kloda and Bartlet 2009). The findings from this study indicated that asking clinical questions and using methods to structure focused questions did not play an important part in participants' theory and practice framework. Participants did not describe using either PICO or SPICE, some had no recollection and some had forgotten about this process. Those that remembered explained that it was not an important part of their practice.

Research relating to the use and effectiveness of methods for structuring clinical questions is inconclusive. Nollan (2005) purported that PICO has been used for several years with much success in assisting learners to formulate answerable questions. Huang et al. (2006) suggested otherwise and identified that the use of PICO has not been investigated for its effectiveness as a method. Based on this observation they conducted a study that aimed to establish how real time clinical questions, written by physicians, were structured. They analysed 59 questions to see if they contained elements of PICO and identified that only two out of the 59 questions met the criteria. Huang et al. (2006) concluded that physicians' use of PICO in writing clinical questions was not well developed and underutilised. Huang's et al.'s (2006) study focused on questions developed by physicians and it was not possible to establish if the originators of the questions had been educated in the PICO method. Subsequently their methodology, an indirect method of establishing question formation, is dubious and the results may not reflect the true use of PICO. In a separate study Iles and Davidson (2006) did identify that PICO was underused. They surveyed 230 physiotherapists using a questionnaire to self-report their EBP knowledge and skill. They reported that only 59% of the respondents formulated structured questions to address practice based issues. Interestingly Iles and Davidson (2006) acknowledged that the use of self-report questionnaires usually leads to a positive overestimation of perceived level of knowledge and skill, therefore the actual figure may be lower than the reported 59%.

Despite the variation of perceived use (Nollan 2005) and actual use (Iles and Davidson 2006) some research, albeit limited in scope, suggests that using methods such as PICO does improve the relevancy and effectiveness of searching for literature and subsequently meets the information needs for clinicians. Schardt (2007) conducted an RCT that investigated the effectiveness of using the PICO method compared with PubMed's clinical queries template for searching literature. Although the study, albeit a pilot, identified no difference between the two approaches the precision and relevancy for searching for literature did improve if a structure was used. Further research is required to establish if PICO is utilised after education and training and also to establish if it is an effective method for meeting the information needs of clinicians.

According to the traditional approach to EBP, once a question has been formulated this leads to the identification of the type of evidence required for practice and helps structure the search process for effectively acquiring evidence (Dawes 2005). The findings from this study suggest that formulating structured questions was not part of participants' theory and practice framework. This raises questions as to how participants effectively identified their information need; the findings in this study indicate that a more complex process exists that relates to their ontological perspective.

Theme 1, a personal theory of EBP, postulates that participants had developed an ontological view which guided them towards a particular evidence type and this selection of evidence was predicated on their beliefs and assumptions about EBP and on the presenting clinical situation. When faced with a particular clinical situation or patient issue, rather than constructing a clinical question, using mechanistic approaches such as PICO, participants viewed the clinical situation through a particular ontological lens which enabled them to identify their immediate knowledge and information need. Thus, the process of identifying an immediate clinical information need was an excogitative and sometimes tacit process facilitated by their ontological perspective rather than a structured and iterative process of formulating questions.

The use of question structures, such as PICO, may be too prescriptive and not pragmatic enough for physiotherapists. Based on the study findings, it is recommended that when establishing an information need therapists need to be

aware of their prevailing ontological perspective and consider the following questions: will the evidence be useful for the patient, useful for the therapist, or will the evidence itself be of primary importance? Once therapists have established their ontological position then appropriate question forming tools, such as PICO or SPICE, could be used to determine the type of evidence to search for. This approach may prevent therapists from selecting evidence from within a single research paradigm and encourage the wider selection of evidence relevant to their practice.

Critical Appraisal

Appraising evidence for its validity and usefulness was the most important skill domain practised by participants in this study and different approaches were taken. Validated appraisal tools, such as those published by PEDro (Physiotherapy Evidence Database), SIGN and CASP formed the foundation of critical appraisal (CASP 2013, PEDro 2014, SIGN 2014). Initially, and as "novice critical appraisers", all participants in this study used appraisal tools and checklists. At this point in their appraisal "career" they were inexperienced and lacked confidence and understanding. Appraisal tools were important for them because concepts of appraisal had not been learnt

As appraisal experience increased understandings of appraisal concepts became learnt and internalised and this predicated a move towards the use of appraisal knowledge and a move away from the use of checklists. This was a more efficient way of appraising evidence that involved a reliance on the use of internalised appraisal concepts as opposed to a time intensive systematic approach using published and readily available critical appraisal tools. This approach, however, was less precise and robust in that some concepts were ignored, forgotten or misunderstood. Mantzoukas (2008) gives some insight as to why the move towards memorising appraisal concepts takes place. He suggests that practitioners are busy professionals dealing with complex and unique clinical problems; it is therefore difficult for them to appraise evidence using time consuming approaches such as appraisal tools. As a result practitioners rely on memory but this is not an infallible or rigorous approach (Mantzoukas 2008:218).

For the most part, participants conducted a balanced critical appraisal, one that used checklists in formal situations (ensuring precision and rigour), coupled with

an approach that relied on the use of learnt appraisal knowledge in less formal situations, an approach that was less precise but more efficient for the clinician in the clinical environment.

Research supports the premise that use of appraisal tools enhances learning and skill development. Pearce-Smith (2012) conducted an electronic search of databases and identified no fewer than 96 studies that reported the use of critical appraisal checklists of which approximately 40 indicated a positive outcome in knowledge and skill. Similarly in a more robust Cochrane systematic review Horsley et al. (2011) identified that teaching critical appraisal to health professionals may improve their knowledge (however the review identified 148 potentially relevant studies of which only three were deemed to be of sufficient quality); nonetheless the use of appraisal tools predominates as the essential method of evaluating evidence and seems to be an effective way for developing appraisal skills.

Notably, the above approaches were conscious and explicit processes that required active thought. The appraisal process required thinking about concepts such as randomisation, the number of subjects and the generalisability of the findings. Subsequently the use of learnt knowledge and checklists was a metacognitive process, a process that required active and conscious thinking about the concepts of appraisal. However, for some participants, as appraisal expertise developed, there was a move away from conscious appraisal to one that relied on “judgement” and “feeling”; this approach was intuitive and relied, tacitly, on previous learning and understanding. Evidence was read and, at the same time, a subconscious act of appraisal occurred; this led to participants developing a feeling about the value of evidence. This approach was efficient and effortless compared with the active approach of using checklists but lacked precision and rigour.

This process of moving from the use of checklists to the use of memory and then intuition is reflected in theories relating to developing expertise and the use of different types of knowledge. Shepard et al. (1999) explain that developing competency and expertise starts with explicit learning and analysis (the learning and application of appraisal tools) and then, with experience, moves to more intuitive thinking (the use of internalised knowledge).

The process and steps of appraisal described above resonates with how clinicians use different types of clinical knowledge. Herbig et al. (2001) and Jensen et al. (2007) explain that novices need to rely on explicit knowledge and require rules of practice or guidelines to help them act analytically. Higgs and Titchen (1995) classify this explicit type of knowledge as propositional knowledge, knowledge that is gained through research and study and is available in the public domain. Jensen et al. (2007:34) describe this as "knowing that or knowing about things" and this knowledge base, based on empirical facts, provides clinicians with important theories and general principles which underpin practice. Within the context of this study the use of appraisal tools, as a form of propositional knowledge, gave the participants necessary guidance, understanding and skill to accomplish the appraisal task with confidence. However their approach was mechanistic and time intensive and because understandings of appraisal were not fully developed they found it difficult to apply in non-routine situations, a characteristic common to novice practitioners (Jensen et al. 2007). With time and experience the participants in this study became more confident and competent in their appraisal skills and relied on a different form of knowledge called practical craft knowledge (Higgs and Titchen 1995). This type of knowledge represents "knowing how, knowing about" and "theory in use" and encompasses the practical expertise and appraisal skill gained through an individual's practice experiences (Jensen et al. 2007:34). Over time this practical knowledge or "knowledge in action" as described by Schön (1983), became intuitive and tacit in nature and participants demonstrated that appraisal actions were carried out spontaneously and without conscious thought. However, and importantly, when [appraisal] practice becomes more and more repetitive and routine "knowing in practice" becomes increasingly more tacit and automatic, the individual may miss opportunities to think about what they are doing (Schön 1983).

This raises an interesting philosophical point: EBP has been discussed in literature as an education paradigm and as such it represents a fundamental set of beliefs and views that guide practice (Mariotto 2010, Plack 2005). One principle that continues to underpin EBP stems from the original work of the Evidence Based Medicine Working Group (1992) and posits that evidence should be used conscientiously and judiciously. This implies that methods such as appraisal should be an explicit and conscious process. Therefore, philosophically, if

clinicians develop and move towards a tacit and learnt approach to appraisal can this be considered as evidence based practice? Studies have certainly shown that teaching critical appraisal and the use of appraisal tools improves knowledge and skills but as Bell et al. (2008:1168) identify, "*physicians' ability to recall what they had learned about critical appraisal diminished relatively quickly, despite large initial knowledge gains and positive learner evaluations*". Thus, if knowledge of appraisal becomes tacit, with time, are the principles of appraisal lost and does skill degrade?

The implications for practice are clear: practitioners should be encouraged, prompted and reminded to use validated critical appraisal tools whenever the clinical circumstances allow. This will prevent the process of appraisal from becoming tacit and will ensure that principles of appraisal do not degrade with time and experience. However, the author recognises that a busy clinician may not have the time or the motivation to formally appraise evidence, so the reliance on learnt principles or tacit use of knowledge may be the most pragmatic option; certainly the findings from this study suggest that regular "boosts" using validated appraisal tool helps to maintain an acceptable level of appraisal using memory alone. Further research is warranted and it would be interesting to establish if the same appraisal outcome (e.g. establishing the worth and validity of evidence) would be achieved if the use of validated tools, the use of memory, or tacit appraisal based on intuition were compared.

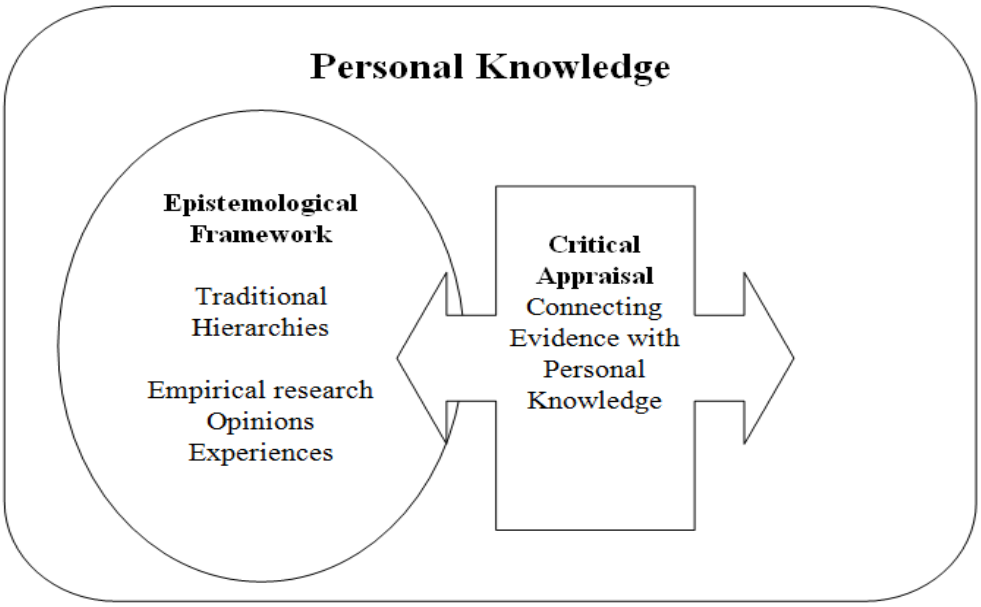
There was more to the appraisal process than establishing the validity and worth of evidence. An additional benefit was identified, in that critical appraisal connected the content derived from evidence with the individual therapist. For example, critical appraisal was the conduit by which findings from research were incorporated into the personal knowledge base ready for use in clinical practice. Evidence was appraised and key messages for practice were incorporated into an individual's knowledge base as a precursor to meaningful clinical action. The act of appraisal connected the content of evidence with the individual and represented the first part of translating evidence into practice (Theme 2) (Figure 7.3). Protagonists of EBP emphasise that that the practise of EBP should integrate individual clinical expertise with best external evidence and French (2002:253) develops this notion and identifies that EBP "*is the systematic interconnecting of scientifically generated evidence with the tacit knowledge of the expert*

practitioner". How this interconnection occurs is not readily identified or discussed in contemporary literature but the findings from this study indicate that the appraisal process, whether clinicians use checklists or rely on memory, was the conduit which enabled the connection of external evidence with their personal knowledge.

The realisation that critical appraisal connects evidence with the individual has ramifications for practice. Previously it was discussed that qualitative research was underutilised primarily because of a lack of understanding and an inability to comprehend and use the findings in practice. Critical appraisal of qualitative research, using recognised appraisal tools, would act as the conduit for therapists to develop a deeper contextual understanding of qualitative research. Educationalists need to develop an enhanced programme of qualitative critical appraisal in order to begin the process of internalisation of appraisal principles and to allow therapists to connect qualitative evidence with their clinical reasoning.

As previously identified participants in this study also valued and drew from other sources of evidence which included knowledge derived from credible colleagues' clinical experience, theory, patients and carers. Authors agree that wider sources of evidence should be considered within the paradigm of EBP (French 2002, Tonelli 2006). If such sources of evidence are to be accepted in this paradigm then they must be subjected to the same level of critical appraisal and evaluation as their empirically based counterparts. Experience and evidence derived from theory needs to be evaluated for its worth and usefulness. However the author was unable to find explicit methods for conducting such appraisal and subsequently calls for the development of new appraisal processes. One participant in this study identified an approach for establishing the value of non-empirical evidence. He explained that he used reflection as a method to compare credible knowledge from colleagues with his set of values and beliefs. This may lay the foundation for developing a reflective appraisal approach for assessing the worth of non-empirical evidence and warrants further investigation.

Figure 7.3: Critical Appraisal, Connecting Evidence with the Individual



Application of Results into Practice

According to the standard EBP model the penultimate step requires the practitioner to simply implement findings into practice (Dawes et al. 2005). Methods for transferring and implementing evidence are diverse. Originally the EBMWG (1992) paper suggested that practitioners should use and apply evidence from hierarchies in a stepwise process and should only look at lower forms of evidence if more robust methods were not available. Scott (2007:4) discussed other strategies including a “passive diffusion model” where the strength of evidence published in journals “speaks for itself” and simply drives clinical decision making and change processes. He also described the notion of pre-packaged "ready to go knowledge", in the form of systematic reviews and practice guidelines; it was envisaged that these would be used directly to make practice and health care decisions. However, the above methods for applying evidence were deemed too simplistic and did not consider wider sources of knowledge, nor did they consider the complexity in which evidence transfer and utilisation took place, subsequently other approaches have been suggested (Igo 2011).

Tonelli (2007) identified that the use of evidence should incorporate clinical expertise into the mix but many models, such as those described above, did not

account for individual interpretation. Mantzoukas (2008) identified that such approaches neglected one of the tenets of EBP that external evidence should be integrated with clinical expertise. Based on these observations Tonelli (2007) suggested a casuistic approach where evidence is selected and applied based on the requirements of the presenting situation and clinicians choose evidence on a case by case basis. Tonelli's (2007) model is pragmatic and considers evidence from research, experience, theory and patients' preferences but how this model is operationalised and realised in practice is not described nor supported with any empirical evidence.

Management of change models have also been proposed to drive the use of evidence in practice. The JBI model of evidence based health care describes a process of staged evidence implementation and transfer (Pearson 2005). Evidence that has value is synthesised into useable summaries, such as guidelines, systematic reviews and meta-synthesis of qualitative evidence, and these are further summarised into useful and useable packages. These packages of knowledge are then converted into key actionable messages which are then transferred and utilised into practice using education and training methods within the context of the culture of the organisation.

The experiences of the participants in this study are related to some degree to the approaches for transferring evidence into practice, such as the use of ready to go and pre-packaged evidence in the form of guidelines and systematic reviews, and it could be argued that participants also adopted a casuistic approach. Despite these similarities this study revealed previously unobserved and unreported methods of evidence transfer, a process which reflects Mantzoukas and Watkinson's (2008) observation that evidence should be integrated with clinical expertise. Translating appraised evidence into practice was a complex metacognitive process whereby individuals synthesised their understandings of the evidence within a specific clinical situation. A clinical decision was attained by reflecting on three interlinked components: the practitioners' perceptions and beliefs about the transferability or generalisability of the evidence; their clinical experiences and clinical know how; and the current clinical situation. This reflection on their internal understandings of the value of evidence with the external world of clinical practice enabled participants to make a judgement to "transfer" the evidence into clinical practice (Figure 7.4).

Figure 7.4: Reflection and Translating Evidence into Practice

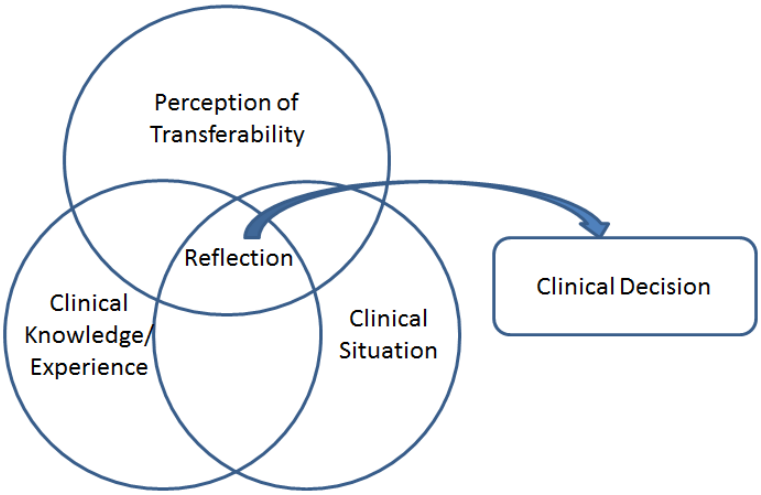


Figure 7.4 outlines that an important part of the decision making process was the physiotherapists' ability to reflect and establish the transferability or generalisability of evidence. Polit and Beck (2010:1452) explain that "*generalisation is an act of reasoning that involves drawing broad conclusions from particular instances—without generalisation, there would be no evidence based practice: research evidence can be used only if it has some relevance to settings and people outside of the contexts studied*". Put simply it is the act of judgement where results or findings are applied into practice. How this is achieved is contentious and numerous approaches are espoused. Polit and Beck (2010) summarise three main models of generalisation: statistical generalisation, where findings are extrapolated from a sample to a population (associated with quantitative research); analytical generalisation, where researchers strive to generalise from particulars to broader constructs or theory; and transferability or case-to-case transfer, which involves the use of findings from an inquiry to a completely different group of people or setting. It is beyond the scope of this thesis is give a complete overview on the idiosyncrasies that surround these models of generalisation, but suffice it to say that the participants in this study did not have a complete grasp of the different approaches although they did have an "approximate understanding" of the terms which influenced their use of evidence and clinical decision. Some attempted to

compare the statistical characteristics of the sample with their patients whereas others attempted to consider the theory behind the findings and relate them to the ensuing clinical situation.

Miles (2007:549) explains that generalising findings from evidence plays an important part in practical reasoning and suggests that clinicians should view evidence in terms of its "*approximate applicability*" as characterised by the participants in this study. Participants had not developed a complete understanding but it was enough to consider the approximate applicability of the findings. Miles (2007:549) extends his discussion and suggests that the notion of transferability, on its own, is not enough to make reasoned judgement and states that the use of biological facts or empirical evidence does not go very far alone. The generalisation of evidence needs to be "*put into action*" within the context of the presenting clinical situation. He explains that for this to happen "*particularisation*" must occur; the process whereby the particular needs of the patient are met so that general principles gleaned from evidence can be applied.

The findings from this study support Miles's (2007) discussion on the process of generalisation and particularisation. Participants evaluated the transferability of evidence (although this was approximate) and reflected on their clinical know how to form a judgement particular to the clinical situation (Figure 7.4). In short participants reflected on the "applicability of the evidence" and through reflection synthesised their understandings of the clinical situation with their clinical knowledge to come to a decision and clinical judgement. Igo (2011) makes an interesting observation and cites Mantzoukas (2008) and Mantzoukas and Watkinson (2008) who argue that EBP is perceived as being objective; however, and paradoxically, it requires the subjective interpretation of the evidence to initiate the clinical decision making process. The findings from this study confirm that a reflective process binds the elements of EBP together to enable a decision: the very process, one of intuition and opinion, that the original proponents of EBP aimed to distance themselves from. The author therefore recommends that reflection should become an integral component within the teaching of EBP; it is envisaged that enabling practitioners to reflect on the approximate applicability of the evidence alongside clinical expertise and the clinical situation will facilitate successful decision making.

Translating Evidence into Meaningful Action

Once a clinical decision had been made participants then transformed the decision into a meaningful action. Meaningful action was conceptualised in one of three ways: based on Estabrooks (1999:204) classification for utilising research, evidence was used ***instrumentally***, ***conceptually*** or ***symbolically***. These approaches for using evidence formed an important component of an individual's personal theory of EBP (Figure 7.5).

Instrumental use of evidence was associated with those individuals who develop an evidence centred view of EBP. These practitioners (physiotherapists "having a go" or "having a bash" at using evidence) applied research findings directly into practice or translated them into useable objects that guided their actions, such as guidelines, clinical standards or protocols.

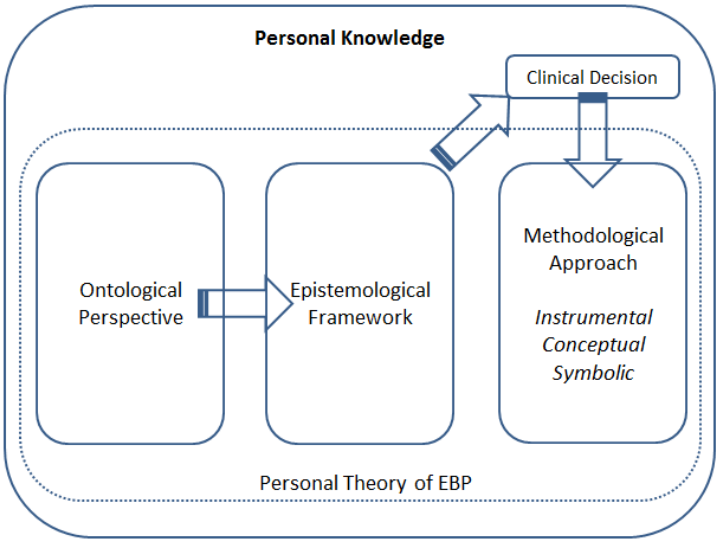
In a different context, if the ontological view was therapist-centric, then evidence was selected from a broad epistemological framework and centred on the therapist's individual requirement. In such cases, evidence was used ***conceptually*** to inform thinking and understanding, which subsequently led to a change in action within the clinical environment.

In another example, ***symbolic*** use of evidence was associated with practitioners who needed to use evidence as a persuasive or political tool usually for justifying service delivery or improvement or if there was a real political need to affect change for patients. In such cases evidence could be viewed through any of the ontological lenses leading to a broad selection of evidence, but importantly political agendas needed to be addressed.

Using such frameworks to guide the implementation and utilisation of evidence into practice is important. Jack (2006) explains that there is a current gap between research production and using research in practice and identifies that clear methods of translating evidence into practice are required. Although the instrumental, conceptual and symbolic approaches seem theoretical Estabrooks (1999), using structural equation modelling, showed that these modes of implementation existed within the nursing profession. Similarly the findings in this

study suggest that physiotherapists' approach to using evidence strongly relates to and associates with this classification. However, the instrumental, conceptual and symbolic use of evidence was utilised in a tacit way; physiotherapists were not aware of this approach although it was clearly evident in their personal theories. Subsequently, this conceptual approach needs to be made explicit so that it can be embedded into practice and the implications of this will be discussed in the concluding statements in this thesis.

Figure 7.5: Methodological Approach: The Process of Implementing Evidence



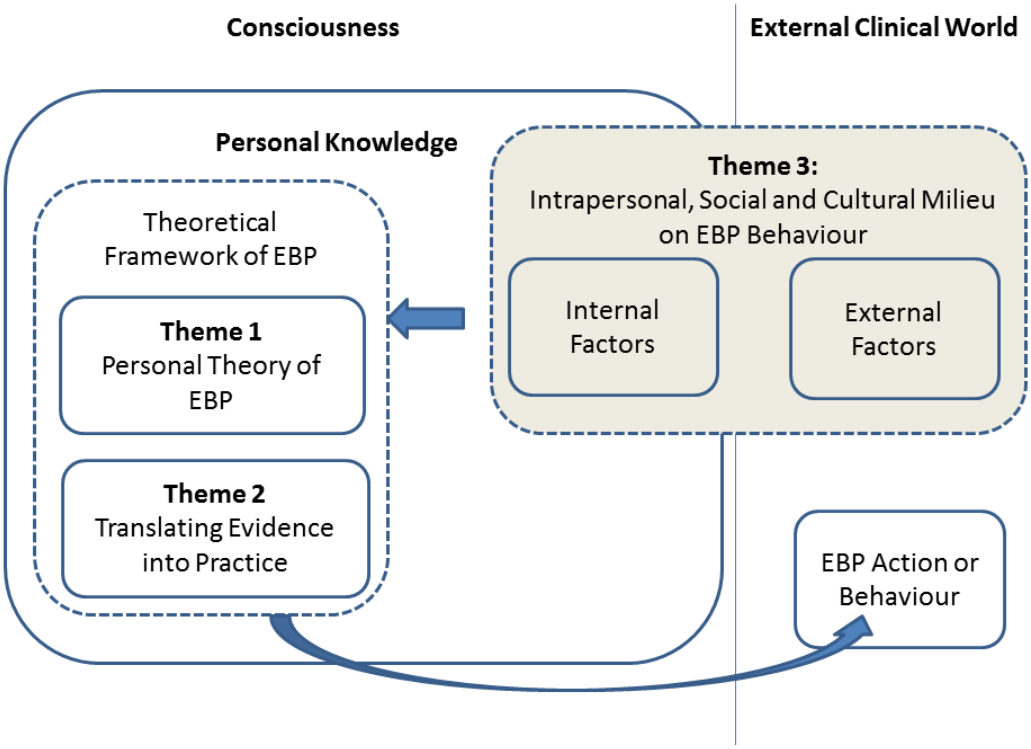
Theme 3: The Impact of Intrapersonal, Social and Cultural Milieus on EBP Behaviour

The previous discussion postulates that the participants in this study, as a result of their clinical and educational experiences, had developed a set of attitudes and beliefs about EBP. Their attitudes and beliefs underpinned and determined their personal theory of EBP (Theme 1) and how they practised (Theme 2). Theme 3 expresses the interplay and relationship between intrapersonal, personal and socio-cultural factors that affected and influenced an individual's evidence based practice belief system and subsequent practice.

Theme 3 identified that a set of factors internal and external to the individual influenced EBP thinking, action and behaviour. Intrapersonal factors, factors from

within the individuals themselves, included the need to learn, the need to deliver effective patient care, and their knowledge of EBP. These factors, in varying proportions, acted as significant intrinsic or extrinsic motivators or acted as significant barriers for practising the principles of EBP. Similarly, factors external to the individual affected their behaviour; these factors included the organisational and social culture in which EBP took place, competing time pressures and wider national and legal issues such as the requirement to maintain professional registration (Figure 7.6).

Figure 7.6: Internal and External Factors Influencing EBP Attitudes and Behaviour



The findings summarised above and described in Theme 3 are not dissimilar to those reported in previous studies (Heiwe et al. 2011, Iles and Davidson 2006, Jette et al. 2003, McColl et al. 1998, Upton et al. 2012). Despite the different methodological approaches and contexts in which the above research took place similar findings were identified. In essence, the most frequently reported factors that affected the uptake of EBP included: lack of time; underdeveloped knowledge for interpreting research and implementing findings; uncertainty about what the research reported; being isolated from peer support; and limited infrastructure such as access to computers, databases and literature. The studies highlighted

above fall into two distinct categories: those that report on individual factors and those that report on cultural factors, the latter being more influential than individual factors in terms of promoting the uptake of research evidence into practice (Thomas et al. 2011). The findings in this study confirm that individual and cultural factors are not isolated entities but significant interplay occurs between them and each affects individual evidence based practice attitudes and behaviour.

Theme 3, for example, suggests that organisational culture affected an individual's thoughts, actions and behaviours. Organisational culture (OC) has been extensively discussed in management and organisational theory literature and it is beyond the scope of this thesis to discuss and describe all its intricacies but it is briefly discussed in context with the findings of this study. OC is an abstract concept and is difficult to define but fundamentally it can be viewed as the personality of an organisation and as such influences behaviour. Glisson and James (2002:770) describe OC as the organisational norms and expectations which influence how people behave and how things are done. These norms and expectations emerge from within an intricate web of policies, formal and informal structures and procedures, cultural and departmental values, and power and social relationships that constitute the essence of an organisation (Brooks 2002).

If OC is "the personality of the organisation" that influences behaviour then organisational climate can be seen as the tangible and non-tangible properties of the organisation that individuals perceive and react to. Holloway (2012:13) discusses OC and draws on Litwin and Stringer's (1968:66) work; they coined the original definition of organisational climate as "*the set of measurable properties of the work environment that is either directly or indirectly perceived by the employees… [and] influences and motivates their behaviour*". Thus, culture and climate are held to influence attitudes in the workplace and Aarons (2005) theorises that organisational culture and climate are two factors thought to influence attitudes towards the adoption of EBP. The findings in this study begin to corroborate such theoretical propositions: participants reacted to the organisational climate imposed on them, attitudes and beliefs were influenced by organisational culture and evidence based practice thinking and behaviour (Themes 1 and 2) adapted accordingly.

For example, participants identified cultural factors that influenced their thinking and action such as the journal clubs and "senior staff" attitudes towards EBP. For some participants taking part in journal clubs was an important part of their experience and represented a mechanism which supported individual practice. Journal clubs were part of the fabric of the organisation and as a social gathering they reinforced cultural norms and fostered positive beliefs and attitudes about EBP. Journal clubs enabled participants to get involved with evidence based service development programmes; participants became part of the organisational culture and the prevailing climate within the journal club (e.g. one that fostered a culture of clinical effectiveness) influenced participants' beliefs, attitudes and behaviour. This modulation of attitude subsequently influenced an individual's personal theory in that ontological perspectives were adopted that reflected the prevailing organisational climate. Harris et al. (2011) conducted a systematic review to establish whether journal clubs were effective in supporting evidence based decision making. They established that journal clubs were a valuable source of interaction but concluded that it was not clear whether journal clubs were effective in supporting evidence based decision making. The findings in this study address this ambiguity and support Thomas' (2011) opinion that formal and informal structures within an organisation, such as journal clubs, have the ability to promote a positive or negative EBP climate; subsequently this directly affects an individual's attitude and belief which in turn determines their EBP thinking and action. The findings in this study represent new insights into the mechanism by which the individual and the organisation interact and influence the implementation of EBP.

Theme 3 describes some of the intricate relationships between the individual and the socio-cultural environment and begins to place EBP behaviour within a theoretical context and can be explained within the context of social ecological theory. Fundamentally, social ecology represents a framework or set of theoretical principles for understanding the interaction between the individual and his or her social and cultural environment. McLeroy (1988:354) explains, that individual behaviour affects, and is affected by, "multiple levels of influence" and individual behaviour shapes, and is shaped by, the social environment (reciprocal causation). This ecological model of behaviour certainly resonates with the findings in Theme 3 and can be used to contextualise the findings of this study.

Using and adapting McLeroy's (1988:355) model of social ecological theory, evidence based practice behaviour could be viewed as being determined by the interaction between the following levels of influence:

1. **Intrapersonal influence**: The individual characteristics that influence behaviour such as knowledge of EBP, the need to learn and the need to do good for the patient.
2. **Interpersonal influences**: The relationships with physiotherapy colleagues and peers influencing attitudes towards EBP.
3. **Organisational influences**: Rules, regulations, policies and structures constraining or promoting evidence based practice behaviours such as departmental culture and the use of evidence based protocols.
4. **Community influences**: Social networks and community norms such as the use of journal clubs
5. **Public policy**: Policies and laws that regulate or support evidence based practice actions such as the statutory registration requirement to practise EBP as determined by the Health and Care Professions Council.

For example participants in this study had developed a set of intrapersonal attributes such as the need to learn or the need to deliver effective patient care; these acted as significant factors for promoting a positive and effective attitude towards the practice of EBP. The need to learn and practise EBP was invariably driven by the needs of the patient (interpersonal influence), expectations of peers (community influences) and the need for continuing professional development and registration (public policy influences). An individual's experiences, beliefs and values that determine behaviour could potentially be mapped out with the above model and could be used as a reflective tool to enable educationalists and practitioners to identify the key drivers and facilitators within an individual's milieu of EBP. Paraphrasing and adapting the notion of reflection (Richardson 1993, Schön 1983) in this case the above model could be used as a reflective structure that could enable educationalists and practitioners to look at incidents critically, replay them within their imagination, analyse and attempt to uncover the key factors that influence EBP behaviour. This may lead the individual to modify and change practice in light of these new understandings.

Chapter 8:
Study Conclusions, Primary Recommendations and Reflections

Phenomenology, through exploration of experiences of a particular phenomenon, makes what is implicit within consciousness explicit and concrete for all to see. Through phenomenological description it has been possible to identify a personal theory and practice framework (Themes 1 and 2) and has been possible to identify individual, social and cultural factors that influence EBP behaviour (Theme 3).This study gives unique insight and understandings as to how physiotherapists practise EBP in their real world of clinical practice. The challenge now lies in the conceptualisation of these experiences and to promulgate these new understandings; i.e., making that was implicit in experience explicit and tangible. Recommendations and implications for education, research and practice have been identified throughout the discussion but primary recommendations will be presented in the concluding statements of this thesis.

Implications for Education Practice and Research

Reflecting on the "essential structure of EBP" has enabled the author to conceptualise the findings into a model that could assist educationalists, practitioners and researchers to develop and promote evidence based practice in a pragmatic way. Two models are presented below: one to allow self-evaluation (Figure 8.1) and the other to guide individuals' evidence based practice behaviour (Figure 8.2). The two models are comprised of the key essences of Theme 1: an ontological perspective, epistemological framework and methodological approach. A set of questions is associated with each of these components and the questions act as reflective triggers to enable practitioners to identify their assumptions about EBP (Figure 8.1) or to help guide their practice (Figure 8.2).

Figure 8.1: A conceptual model: How do you practise EBP?

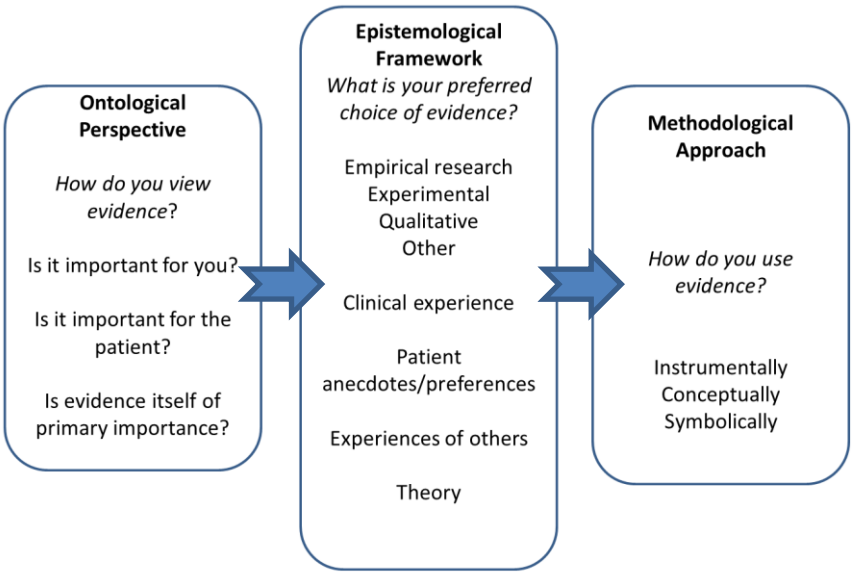
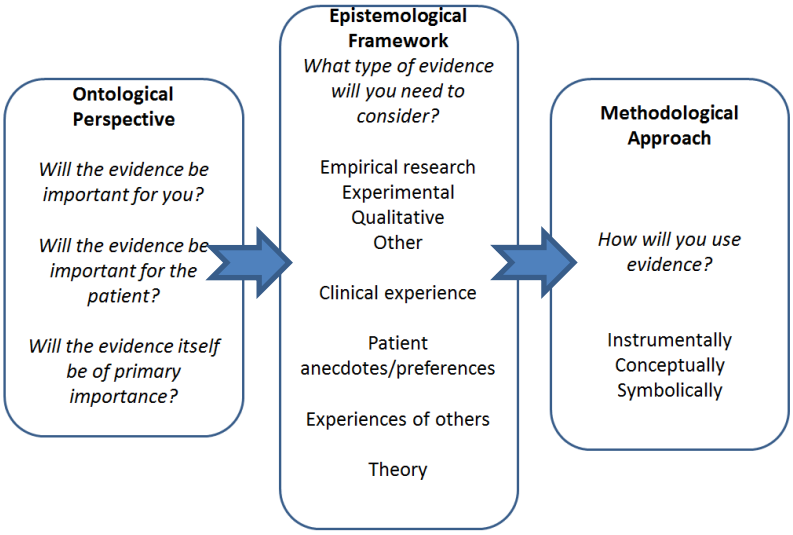


Figure 8.2: A conceptual model: A Guide for implementing EBP



It is envisaged that the use of the above models will enable educators and practitioners to become aware of the range of "evidence based styles and alignments" that may develop. With guidance and support, practitioners could be encouraged to identify their naturally aligned approach to EBP and develop their least preferred ways of practice. For example, the models may assist those practitioners that naturally align with quantitative evidence to place more value on qualitative research, and those that rely on experiential evidence to reconsider

empirical research in the decision making process. The findings from this study suggest that physiotherapists are more likely to utilise positivist evidence and less likely to use qualitative evidence. One issue with non-utilisation was that participants did not understand the concept of qualitative research and did not know how to implement it. Educationalists could use the above models to enable therapists to reflect on the nature of qualitative evidence and consider its use in practice. The author recommends that therapists should be introduced to the concept of "conceptual use of qualitative evidence" as a starting point; this is because conceptual use of qualitative research informs thinking and this will have the effect of developing understandings about qualitative research (Sandelowski 2004). Numerous other educational and self-development strategies could be developed using the above models as a basis for critical understanding of EBP.

The findings in relation to Theme 1 require further validation; it is possible that evidence based styles and alignments may be more or less richly described in different and more diverse groups of physiotherapists. Similarly, this study has not been able to identify if an individual's personal theory of EBP is fixed or whether it changes in different clinical contexts and this warrants further investigation. The findings from this study only relate to physiotherapy professionals and the existence of an ontological perspective, epistemological framework and methodological approach in other professional groups cannot be established. Research into other professions, as well as extending research into the wider physiotherapy population, would add further credibility to the findings in this study.

To investigate the above an index of evidence based styles could be developed. A self-scoring instrument could be constructed using a series of attitudinal or Likert scales (Oppenheim 1992) and structured into three domains: a series of statements that establishes the nature of an individual's ontological perspective; a series of statements that identifies an individual's evidence preference; and a series of statements that identifies an individual's preferred methodological approach. The development of such an instrument could be used to establish if the above three domains exist and to what extent. Once established the instrument could be used to identify individual evidence based practice alignments and could be used as a professional development tool for individuals to reflect on their evidence based practice style. The developed scale could also be used as a

research instrument to measure changes in evidence based practice alignment as a result of educational intervention.

Reflections on the Research Process and Limitations of the Findings

Phenomenology, as a science, has a long philosophical history and multiple methodological approaches have been described in the literature. Phenomenology means many things to many people and, as Streubert-Speziale and Carpenter (2007) opine, there is no single step by step method for conducting phenomenology; each methodological approach interprets the philosophy of phenomenology differently. For any researcher intending to conduct phenomenological research this represents a potential limitation as there is not an agreed or standardised approach that can be used to guide study design (Dowling 2007, Flemming 2007). It is therefore necessary to take ideas from original works from philosophers and writers in phenomenology and these ideas need to be interpreted to structure the theoretical and methodological foundation for phenomenological studies (Speziale and Carpenter 2007). For this thesis I read the works of Husserl (1931, 1982) and writers in phenomenology such as Colaizzi (1978) and Moustakas (1994) and interpreted their ideas to underpin the methodology and design. However, despite the guidance from supervisors who have considerable experience in this area, it is possible that misinterpretation or misrepresentation of key ideas may have occurred which ultimately could affect the trustworthiness of this study. For example, Speziale and Carpenter (2007:89) explain that Husserl does not offer a blueprint for conducting free imaginative variation but offers an approach that researchers should consider; he suggests that researchers should reflect and "wonder" about the phenomena under investigation, they should reflect on the essences and descriptions from their participants and vary their interpretation until the final essence of a phenomenon is revealed. Moustakas' (1994) suggestion is more of an ideal rather than a guide and subsequently the process of following phenomenological methods, such as imaginative variation, depends very much on the interpretation one places on such statements.

In part, rigour in qualitative studies is associated with the notion of "trustworthiness": that which persuades readers that the findings reported are believable and the research process is credible (Tappen 2011:153). Strategies

have been suggested to ensure and enhance trustworthiness of qualitative research such as detailed descriptions of the data collection and data analysis methods. This adds to the study's "credibility", a term used to assess the value and worth of qualitative research (Henderson and Rheault 2004). Therefore, it is for the reader to decide if the phenomenological approaches taken in this study have been described in detail and justified adequately to account for any misrepresentation that may have occurred.

Another limitation relates to the sampling strategy used in this study. Criterion sampling, a form of purposive sampling, was used to select "information rich cases" (Patton 2002;209) and the aim was to ensure each participant met the aims and purpose of this study, that the method of selection was in line with the phenomenological tradition and that participants could give examples of their experiences of the phenomenon [EBP] (Todres and Holloway 2010:183). Initially a sampling frame was created from student records held within the University and prospective participants were contacted, but this achieved a limited response rate. Chapter 3 describes how the sampling frame was altered and potential participants were approached at clinical educator study days resulting in a pragmatic and more successful sampling strategy. This approach however narrowed the accessible group of physiotherapists to those who were also clinical educators. Physiotherapists with clinical educator experience may have a different set of beliefs and attitudes compared with physiotherapists without; subsequently the exclusion of these physiotherapists may have reflected a narrower view of the practice of EBP. Furthermore the criteria for participation included physiotherapists that had undertaken degree level physiotherapy study at Coventry University and it may be difficult extend these findings to other therapists that have had different undergraduate educational experiences. Nonetheless the demographic and biographical characteristics of the participants in this study did reflect a broad representation of physiotherapeutic and professional attributes and this serves to assist the reader in determining the transferability of this study. Similarly, Higher Education Institutions that offer undergraduate physiotherapy programmes of study have, in the last five years, included evidence based practice into their curriculum. This is noted by the fact that Health and Care Professions Council publishes standards of education and training by which such institutions are

assessed for course validation and approval. One such standard reflects the need to encourage evidence based practice (point 4.7) (HCPC 2014).

All of the participants studied at Coventry University and were known to me and this could represent another potential limitation. Knowing the participants was valuable in that rapport was established quickly and open discourse facilitated. However, and on occasion, participants were hesitant and gave answers that they thought I wanted to hear (as discussed in Chapter 3). I reflected “in action” and recognised such tensions and encouraged the participants to be completely open about their experiences. This does raise some interesting points about the nature of researcher subjectivity in phenomenological research.

Finlay (2009) explains that phenomenologists accept that researcher subjectivity is inevitable and the subjective relationship and intersubjective interconnectedness between the researcher and the participant characterises phenomenology. Phenomenologists agree that researchers should pay attention to their "own experience" and reflexively explore their own subjectivity. As an educationalist with experience of teaching EBP I have developed a set of understandings, attitudes and opinions about this subject; I cannot ignore these but at the same time, as a researcher, I cannot allow my own subjective impressions to influence another’s experience. As Finlay (2009) explains, phenomenologists attempt to render themselves as neutral or as non-influential as possible. In this study I described a process of bracketing which enabled me to attain phenomenological reduction; I attempted to hold my ideas and assumptions about the phenomenon in abeyance so I could focus on the phenomenon as it appears from the descriptions of the participants. The final limitation discussed in this thesis relates to the notion as to whether phenomenological reduction through bracketing can actually occur and whether I achieved this. Finlay (2009) explains that some phenomenologists deny that bracketing exists and suggest that critical self-awareness and making assumptions and beliefs explicit is more desirable as it enables researchers to distinguish their beliefs from those of the participants. On reflection, and paraphrasing Finlay (200912-14), I subscribe with her observation that as a researcher I brought a sense of “critical self-awareness” to my own subjectivity, vested interests, predilections and assumptions, and I was conscious of how these might impact on the research process and findings. Although I attempted to bracket, in reality, it was more a process of reflection and critical self-awareness

that enabled the participants' experiences to be interpreted and presented in a truthful and honest way.

A Summary of the Implications for Future Practice, Education and Research

The two conceptual models developed from theme 1, which are presented in figures 8.1 and 8.2, represent an important distillation of the findings from this study and could be used as pragmatic tools for educators and practitioners to explore the context and practice of EBP. These models could be introduced into formal education programmes and practice based learning situations and, subsequently, could be used to act as primers to explore the theoretical and practical application of EBP. The conceptual models could be used to achieve the following:

- To act as a self-assessment tool for health and social care practitioners and to enable them to understand their attitudes and beliefs towards the use of evidence in practice.
- To act as a reflective tool to enable practitioners to understand their therapeutic knowledge preference. This reflective insight could begin to trigger further understandings into the use and relevance of other areas of therapeutic knowledge and evidence.
- To act as a guide that will enable practitioners to think about the context in which evidence could be applied.
- To enable critical thinking and discussion on the selection of different types of therapeutic knowledge or evidence.
- To offer a structure as to how evidence could be applied within a health care context either instrumentally, conceptually or symbolically.

It is recommended that the two conceptual models should be used across different health and social care professions and not limited to that of physiotherapy. The models are reasonably complex and require conceptual understanding of different philosophical principles, for this reason it is envisaged that they would be used at a postgraduate level.

Dissemination of the two conceptual modules has already begun; they have been incorporated into a post graduate research module at Coventry University and elements of the model have been presented at the World Confederation for Physiotherapists congress in 2011 (Appendix XI). Further dissemination is planned: abstracts will be submitted for platform presentations at The Physiotherapy UK conference 2015 and to the 7th International Conference on Evidence-Based Health Care for Teachers and Developers. Papers are also planned outlining the nature of the models and appropriate professional journals will be targeted.

Future research in to this area is also warranted and research instruments need to be developed to validate whether the proposed ontological views, epistemological frameworks and methodological approaches exist within the wider physiotherapy population. If their existence is confirmed then the extent to which they exist and the relationship between their existence and context within practice needs to be determined. To achieve this research goal an instrument that measures individual "personal theories of EBP" needs to be developed for reliability, internal consistency, sensitivity and validity. Once developed how individuals connect EBP with practice could be explored across other health and social care professions.

Other future practice, education and research implications have been identified throughout the discussion chapter and are summarised below:

- Reaffirm the importance of and encourage the use of critical appraisal checklists to develop understandings of appraisal concepts.
- Use qualitative critical appraisal tools to engage health and social care practitioners with qualitative research.
- Educators need to explain the importance of critical appraisal not just as a tool for understanding the validity and worth of articles but also to enable health care practitioners to connect with the content of research articles.
- Encourage the use of appraisal tools to boost memory of appraisal principles and to prevent appraisals from becoming tacit.

- Reflection needs to be discussed in EBP education programmes as a process that enables practitioners to link the transferability of evidence with the clinical situation and with the practitioner's clinical knowledge.
- Develop and explore the potential for using reflection as a critical appraisal process for analysing sources of evidence such as practice experience, patient preferences and colleague opinion.
- Use social ecological models to enable educationalists and practitioners to identify key drivers and barriers that impact on personal theories of EBP (theme 1) and how evidence is translated into practice (theme 2)

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Appendix II: Physiotherapy EBP Module Descriptor (Abridged Version)

Evidence Based Practice for Physiotherapists

210PH

1. MODULE SUMMARY

Aims and Summary

The practice of evidence-based health care is the process of integrating individual clinical expertise with the best available external clinical evidence from systematic research and other important sources. EBP is about using and creating clinically important information to manage individual needs of patients; it is also a process that develops lifelong and self-directed learning abilities in students.

This module will explore the principles of contemporary evidence based practice and will develop students abilities to assess the value of available research findings and other sources of evidence. Developing students evidence based practice capabilities will promote an understanding of quantitative and qualitative research, equip them with skills necessary to make practical decisions about patient care, as well as introducing them to some of the complexities of clinical decision making in areas of cardio-pulmonary, musculo-skeletal and neurological physiotherapy. The module will also introduce students to professional issues surrounding evidence-based health care including the acknowledgement of the diverse needs of patients and the impact of clinical governance.

This module will draw on relevant research theory gained from the introduction to research module in year1 and will develop evidence based practice skills that will underpin theory and practice in the three core physiotherapy modules in year 2. Students will develop and reflect on the practical application of EBP skills in the professional practice modules in year 2 and 3.

Module size and credits

Module size	Single
CATS points	15
ECTS credits	7.5
Open / restricted	Restricted
Availability on/off campus	
Total student study hours	150
Number of weeks	15
School responsible	HEALTH AND SOCIAL SCIENCES(S5)
Academic Year	2001/2002

2. TEACHING, LEARNING AND ASSESSMENT

Intended learning Outcomes

By the end of the module students should have the ability to:

1. Discuss and evaluate the relationship between EBP and research.
2. Evaluate and use evidence to help make informed theoretical decisions about patient care considering diversity.
3. Pose clinically relevant, well-defined questions before accessing evidence.
4. Develop strategies to search for evidence.
5. Critically appraise evidence and methods in quantitative and qualitative research.
6. Use findings from research and other sources of evidence to inform clinical practice and to understand policy.
7. Discuss ethical and professional issues that relate to evidence based health care and research.
8. Reflect on EBP principles and consider personal strategies to implement and affect change in relation to clinical practice.

Indicative content

- This module will initially look at the historical development of evidence based health care exploring its relationship with research, effective clinical practice and its role in supporting continuing professional development.
- Development of key skills in evidence-based practice will be fundamental to this module. Focusing on the core areas of physiotherapy and research this module should develop the following EBP abilities. Asking appropriate clinical questions; finding relevant literature, articles and research using appropriate databases and other sources of information such as the Cochrane database; critically appraising evidence in quantitative and qualitative research and using evidence to make theoretical decisions about patient care.
- The module will use appropriate "hierarchies of evidence" to explore methods of research. Students will consider the appropriateness of qualitative and quantitative methods and their use for clinical decision making. The relative strengths and weaknesses of research designs and evidence for addressing clinical issues will also be explored.
- The module will also cover professional, ethical and legal issues that relate to the practice and implementation of evidence based health care. The module will focus on areas such as balancing patient choice with clinically effective intervention, addressing issues that relate to the use of clinical guidelines and the importance of EBP within the framework of clinical governance.

Teaching and learning methods

This module will utilise a range of teaching and learning approaches for facilitating an effective learning environment for developing EBP skills. Theoretical material will be covered in the lead lectures, and applied and practical material will be covered in seminars. This module will also use case studies and clinical scenarios to create a learning environment that reflects the complexity and uniqueness of clinical practice.

Web Ct will be used to create a virtual learning environment where students will be able to explore data handling concepts and practice using statistical software packages such as SPSS.

Web Ct will support learning in the following ways:

- Links to Internet sites and other useful resources.
- Access lecture notes and other prepared material.
- Use of the discussion forum to explore case studies and clinical scenarios.

Method of assessment

The module will be assessed by two pieces of coursework, each accruing 50% of the available mark.

A Literature search and critical appraisal of an article.
This is a group presentation but students will receive an individual mark. Each group will be given a relevant clinical scenario / dilemma. Each group will have to conduct a literature search and critically appraise an article related to the dilemma. Students will present their findings and demonstrate the article's usefulness for clinical practice. This will assess leaning outcomes 2 - 6 , and 8

Developing a research proposal.
Students will develop a research proposal acknowledging the importance of the process of generating new evidence to support clinical practice. (1500 words) This will assess learning

outcomes 1,3,4,5,6,and 7

Re-assessment: Repeat failed coursework with a new title.

Special Features

This module directly or indirectly relates to all CSP Core Standards, but in particular to Core Standards 1, 2, 4, 5, 6, 7, 9,10, 19, and 20.

Emphasis will be placed on using case studies / scenarios that reflect current EBP issues. Case studies and scenarios will relate to physiotherapy with emphasis towards the practice of musculo-skeletal, cardio-pulmonary physiotherapy and neurology.
Students will cover concepts in data handling using the virtual learning environment, self-directed study, lectures and seminars.

Appendix III: Ethics Documents

Research Ethics Committees Approval

Research Ethics Committee for Wales

REC for WALES

Ymchwil Ethegau Aml-Ganolfan yng Nghymru

Chairman/Cardeirydd : Dr Gordon Taylor

Administrator/Gweinyddes Dr. Corinne Scott

Churchill House, Fourth Floor, 17 Churchill Way, Cardiff, CF10 2TW
Ty Churchill, 17 Ffordd Churchill, Caerdydd, CF10 2TW

Telephone enquiries to: 029 2037 6829 Website: http://www.ares.npsa.nhs.uk Fax No. 029 2037 6824
e-mail: corinne.scott@bsc.wales.nhs.uk

17 June 2009

Simon Igo
Senior Lecturer
Coventry University
Faculty of Health and Life Sciences
Charles Ward Building
Priory Street
Coventry CV1 5FB

Dear Simon

The Essential Structure of Practising Evidence Based Practice: A Phenomenological Description of the Experiences of Physiotherapists.

Thank you for your e-mail regarding the need for ethical review for this study.

The documentation has been reviewed by the Chairman of the REC for Wales, Dr Gordon Taylor, and he agrees that this stud falls outside of the remit of NHS Research Ethics Committees as set out in section 3.1 of the Governance Arrangements for Research Ethics Committees 2001, section 3.1

As such it would not require ethical review.

You may wish to check whether the project should be reviewed by the ethics committee within your own institution.

This letter should not be interpreted as giving a form of ethical approval or any endorsement of the project, but it may be provided to a journal or other body as evidence that ethical approval is not required under NHS research governance arrangements.

Yours sincerely

Dr Corinne Scott
Committee Co-ordinator

Coventry University Ethics Committee Approval

Memorandum

Coventry University

Academic Registry

Registry Research Unit
University Applied Research Committee

To
Mr Simon Igo

cc

From: Laura Noble

Email: Laura.Noble@coventry.ac.uk
ethics.uni@coventry.ac.uk

Tel. No:
024 7688 7011

Delivery Point
JA109

Our Reference

Date
27 March 2009

Application for ethical approval

Dear Simon,

Thank you for your Ethics application. Your submission has undergone full consideration including final approval by the Chair of the University Applied Research Committee. I have attached, for your records, the final decision recorded.

I am pleased to inform you that your may now proceed with your research. Should you have any further queries, please do not hesitate to contact me.

Best wishes,

L. Noble

Laura Noble
Business Partner for Research (HLS)

Encs.

Participant Information Leaflet

Participant Information sheet

Title of the Project

The Essential Structure of Practising Evidence Based Practice: A Phenomenological Description of the Experiences of Physiotherapists.

I would like to invite you to take part in a research study that will explore your experiences of practising Evidence Based Practice. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully. Talk to others about the study if you wish.

Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

Purpose of the study

The aim of this study is to explore and describe the experience of physiotherapists practicing EBP and to give an account of their perspective of applying these principles in the real world of clinical practice.

A description of such experiences from the perceptions of those being studied will enable educationalists to understand how physiotherapists use EBP in the real world of clinical care. An understanding of how practitioners apply EBP will inform future educational design of EBP programmes of study.

I am currently studying for a research doctorate at the University of Bath; this study will form the final thesis.

Why have I been chosen?
You have studied for a degree in Physiotherapy at Coventry University and have been educated in research and evidence based practice; at present you are practising as a Chartered Physiotherapist. We are interested in your experiences of practising EBP in the context of a practicing clinician that has received formal research and EBP education.

Do I have to take part?
'No. It is up to you to decide whether or not to take part. If you do, you will be given this information sheet to keep and be asked to sign a consent form. You are still free to withdraw at any time and without giving a reason.

What will happen to me if I take part?
If you agree to take part I would like to meet at a mutually convenient time for an informal discussion about practicing EBP. The discussion or guided conversation will be in the form of an in depth interview. The meeting will take place in a neutral environment away from your place of work either at

Coventry University or setting such as your home if this is your preference. The interview will take about 90-120 minutes of your time and will be digitally recorded for data analysis.

Expenses and payments:
None, but I will gladly supply the coffee during the interview. To reduce costs I will also meet you at a location near to you.

What do I have to do?
If you agree to take part I will contact you by telephone or email to arrange the interview and we will need to agree a suitable location for the interview to take place.

What are the possible disadvantages of taking part?
There are few disadvantages taking part in this study and risks are limited, however the interview could take up to 90 minutes which will take up your time. There are some risks of disclosing sensitive information about how you work that you may not wish to voice. However, all data will remain confidential and transcripts of data will be made anonymous. You will also have the opportunity to read the transcription of the interview before final publication of the study.

What will happen if I don't want to carry on with the study?
You are free to withdraw from the study at anytime. If you withdraw from the study then all data, electronic, text based or audio, will be destroyed at your request.

Will my taking part in this study be kept confidential?
Yes, all data and information collected from the interview during the course of the research will be kept strictly confidential. Information will be transcribed, coded and made anonymous for your security and will be kept in an encrypted password protected word file. Text based data will be kept locked in a secured filing cabinet.

What will happen to the results of the research study?
The results will form part of my research doctorate, the results will be potentially disseminated through paper or presentation publication.

Who is organising and funding the research?
No funding bodies are involved in this research.

Who has reviewed the study?
The Coventry University Research Ethics Committee has reviewed and approved this study.

What if there is a problem?

'Any complaint about the way you have been dealt with during the study will be addressed'.

Should the complaint relate directly to the research, you are requested to inform the research team who will try to resolve the matter. Failing this, you may wish to contact the Coventry University Ethics Committee chair, Professor Ian Marshall, in writing at AB122, Coventry University, Priory Street, Coventry CV1 5FB, or by telephone on 024 7688 5293."

Contact Details:
Should you require further information then please contact:

Simon Igo
Senior Lecturer
Coventry University
Faculty of Health and Life Sciences
Charles Ward Building
Priory Street
Coventry
CV1 5FB
Tel. 02476 88 8196/8554
Email s.igo@coventry.ac.uk

Thank you for taking time to read this information sheet

You will be given a copy of the information sheet and a signed consent form to keep.

Participant Consent Form

Coventry University

CONSENT FORM

Title of Project:

The Essential Structure of Practising Evidence Based Practice: A Phenomenological Description of the Experiences of Physiotherapists.

Name of Researcher:
Simon Igo

	Please initial the box below
1. I confirm that I have read and understand the information sheet dated ..... for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.	☐
2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason and without my legal rights being affected.	☑
3. I understand that data will be collected using an in depth interview and that data will be held securely on a personal computer and or in a locked and secured filing cabinet.	☑
4. I understand that my interview is being audio recorded and I agree to this.	☑
5. I understand that the data will be held for 4 years in accordance with data protection act.	☑
6. I agree to take part in the above study.	☑

Name of Participant	Date	Signature
[redacted]	16/2/10	[redacted]
Name of Person taking consent (If different from researcher)	Date	Signature
Researcher Simon Igo	Date 17/2/2010	Signature

When completed: 1 for participant; 1 for researcher site file

Appendix IV: Online Diary Selected Excerpts

The Essential Structure of Practising EBP

Reflective diary relating to Phase 3:

About Me

PROFDOCIGO

View my complete profile

MONDAY, 15 JUNE 2009

Reflections on the pilot interview

The pilot interview lasted for 1hour 10 mins and it went very well.

Perhaps the first reflective comment was that the interview flowed very well and I was able to progress the interview based on the participants responses. On occasion I felt that I was beginning to dry up with the conversation and questioning but I was able to elicit further depth of questioning to generate rich descriptions of the experiences of EBP. In retrospect the interview schedule will need to be modified a little more to give me security blanket. EG a list of further ideas that I could potentially explore, should the conversation begin to dry up.

On occasion there were times that I would have liked to explore an area in a little more detail or question on a new but related topic, however by the time the interviewee had finished the "story" and after further questioning the new idea was lost. I need to therefore factor in pauses for reflection so that I can write ideas down for questioning.

Of course a lot of data was collected, I now need to listen again and immerse my self in the data. To do this I plan to use dragon naturally speaking software, text to speech recognition. This may help me to do this as well as speeding up the transcription process.

The interviewee reported that the interview was "easy" a naturally flowing conversation and felt that I did not lead the questioning, the interviewee also felt that I was listening to her conversation. I deliberately summarised some of the interviewees responses to show that I was listening as well as clarifying somethings that she said. A form of member checking that I will continue to use.

Body language:

It was clear that the interviewee was very enthusiastic about EBP, lots of smiling and facial expressions confirmed the importance of this subject to her. There were numerous determined looks through out the interview that confirmed her commitment to the process.

Exploring tacit meaning was also interesting as it was clear that although challenging the interviewee was clearly thinking about the questions, many thought provoking looks were initiated.

In terms of bracketing I was conscious that on occasion my beliefs were driving the questioning, however I recognised this and tried to ensure that my questioning was not influenced by my thinking or beliefs to enable the participant to put her view across.

i did fumble with some of the questions but the interviewee did not notice and stated that this occurs in normal conversation anyway. I agreed and some error in grammar, pronunciation and fumbling with questions is a natural part of the conversation.

Some questions were leading but both felt that these were necessary to promote the conversation, in fact some of the leading questions were used to promote a devils advocate approach to challenge the interviewees beliefs and values towards EBP.

Some of the questions were challenging but appropriately so, the most challenging related to clinical reasoning in that I began to explore the tacit understandings and practice of EBP. The interviewee found this really interesting as it awakened new thinking's towards EBP. In particular a

THURSDAY, 2 JULY 2009

Third Interview

This was a very interesting interview and from the start the participant demonstrated an expert approach to EBP and much of the data collected echoed many points that the previous two participants viewed. However i had a distinct feeling that the three participants were and are significantly engaged in the EBP process. I have since reviewed the sampling approach to see if there is any bias associated with the sampling strategy. At this stage I'm convinced that this is not the case although purposefully sampled there was a degree of chance associated with the participants being chosen. It raises the question whether a disconforming approach to selecting other participants is worth considering.

This interview seemed to be much more in depth and i was pleased that the interview went on for 1.30 mins. It was terminated based on the premise that we both seemed to be asking similar questions and responding in similar ways. Thus it seemed if data saturation had occurred.

The interviewee was very comfortable with the process and it seemed that some of the questions challenged her in that she had to think about the questions in depth, although not impossible to answer.

I also felt that I was doing phenomenology, i felt that the data that was being extracted was a description of the meanings and lived experiences of that person. I seemed to be making explicit that persons consciousness through articulation of ideas and scenarios. I seemed to bee looking inside this persons consciousness and seemed to be able to get her to articulate some of her abstract and concrete thoughts.

Posted by profdocigo at 05:54 No comments:

THURSDAY, 3 JUNE 2010

use a framework to analyse the data

use a lens to look at your data or use a theoretical framework to help look at the data to aid clarty and focus.

eg the theory of knowledge creation and generation
The expert novice paradigm
Education stuff?

Posted by profdocigo at 06:09 No comments:

Interview 12

The final interview took place yesterday. This participant was one of the first students that took the ebp course module at Coventry university, thus represents a the distant most spread of the sample.

Interestingly a lot more reflective interviewing was required to enable the participant to make the link with ebp and practice; her knowledge was in deed tacit and required the interview to raise her level of conciousness about the process of ebp. Different sources of evidence were used and were considered in the decision making process and to an extent subconscious critical appraisal occurred. Critical appraisal did not occur in a formal way, unless it was done in a journal club. A method of appraising anecdotal evidence was also discussed eg testing the theory or information in practice and comparing information with her own frame of reference or knowledge base.

Interesting comments included the notion that ebp can be hidden unlike clinical skills and unlike clinical skills where CPD updates knowledge little development of EBP has occurred only through journal clubs.

The notion of EBP drift is apparent that knowledge has stayed especially with respect to external validity, but in terms of it being a precise activity concious and judicious it has drifted from this original definition. This has significant implications for training and educationalists for developing strategies to maintain the impetus of enhancing and activating EBP in practice over time. There is "temporal drift"!

Posted by profdocigo at 02:18 1 comment:

MONDAY, 22 FEBRUARY 2010

Interview 6

Again a very interesting interview which to a certain extent is revealing very similar responses to the other participants, is this the beginning of data saturation or do I still need to be sure that I am bracketing out my presumptions. The interviewee was particularly insightful into her engagement with the evidence based practice process and there were numerous occasions where she was clearly reflecting on and in action relating to her practise of EBP. However interestingly she did not recognise that she was inwardly reflecting and admitted that she still see's reflection as a method of writing up critical incidents, rather than a meta-cognitive process of experiential learning.

The interview to start with was a little abrupt, I guess she was a little nervous so it took a little longer to explore her conciousness relating to

EBP. But it didn't take to long to warm up although I did feel that I had to work a little harder initially to elicit some detailed descriptions.

Some interesting points emerged from this interview in that since leaving Coventry she has not really revisited tools for critical analysis, instead she reads articles and certain aspects of the article triggers her knowledge about specific critical points; this was really interesting as it would seem that CA seems to be internalised, and in this case at a very early stage. Some aspects of practising EBP are concious such as the use of PICO although she struggled to search for literature, the greatest barrier being able to obtain articles. Evidence from peers is also rated quite highly.

Encouragingly there was an offer form the interviewee to recruit other subjects for the study...snowball sampling in action!

THURSDAY, 18 JUNE 2009

Transcribing

I have started to transcribe the first two interviews. This is not an easy process and is very time consuming. To help with this I am using Dragon Naturally Speaking 10, software that converts speech to text,which theoretically is 3 times faster than typing. Transcribing the data will follow 5 stages:

1. Listen to the interview and transcribe the data using DNS10 in its raw form.
2. Listen and make corrections to ensure a verbatim record.
3. Format the transcript using approprite and consistent abbrieviations.
4. Add in text relating to body language.
5. A final review to ensure accuracy and context.

currently I'm on stage 1 of the first interview.....this is going to take a Long time

Posted by profdocigo at 05:09 No comments:

First interview

The first interview took place on Tuesday 16th June, at 5 15pm. Based on the pilot study the interview schedule was changed to consider points raised in my previous reflections. The interview lasted for 70 mins and was stopped as it was felt that data saturation was reached and no new information was coming forwards. The interview went well, on occasions it was clear that the interviewee struggled with some of the questions,for example I asked if she felt that clinical experience was a form of evidence. it was clear from her body language that she felt that clinical experience was important but there was a clear hesitation and tension because her body language suggested that perhaps clinical experience should not be classed as evidence and she did not want to portray it as such. I recognised this internal conflict and I re assured her that it was her thoughts and opinions that were important and not what I thought. This released the tension and she become liberated in describing her opinions and thoughts relating to EBP afterwards. I will need to consider this further because it may that some participants may feel that what they believe to be EBP is wrong. In terms of bracket ting this served to be a good example, I have clear understandings as to what I believe to be EBP, but these understandings have changed over my 15 years or so of study of EBP. I have moved from the notion of EBM and the use of RCT's as evidence towards a more wider breadt and use of evidence which also includes clinical experience. Whilst I was interviewing I recognised that I had a different perspective to that of the interviewee, but i held these thoughts to one aside and encouraged the participant to describe her thoughts.

The interview schedule worked well and there were very few occasons where I thought I was drying up with the questionning. Interestingly based on the two interviews to date some interesting patterns are begiining to emerge. Which to a certain extent fuled some of the questions through out the conversation.

THURSDAY, 4 MARCH 2010

Interview 8

Interview 8 is now complete. A different interview this time with a different set of experiences...the use of evidence in this case was more tacit and less structured in the approach.. critical appraisal was evident but a different style looking more at the nature of the techniques eg acupunture as opposed to the methodology. The use of evidence was very much grounded in practice.

Two more participants have been contacted and interviews planned...based on the results so far I would like to interview a current student and a recently qualified participant, this i think would give enough diversity over a period of time to look at how EBP is practised.

Some what feeling good about the research process at the moment as I'm nearing the end of data collection. the next step will be for me to understand to use NVIVO in prep for data analysis

Posted by profdocigo at 02:28 1 comment:

Bracketting

bracketing out and holding my pre-suppositions in abeyance is now becoming a little more difficult. After each interview and during each interview it is clear that themes are emerging and that data is becoming saturated...as the interview continues similar themes ar emerging and as an interviewer it is becoming difficult not to allow my previous thoughts and analysis on the interviews to affect the questioning. I'm certainly aware of this during the interview process and it is very akin listening to patients...I know what the the patient and the interviewee in this case is going to say before they say it and i have to hold back and hold my thoughts in abeyance to allow the interviewee's to say what they really mean. Interestingly though through the exploration of their conciousness it is clear that a lot of what the interviewees describe is tacit...for example the use of evidence in practice, it is clear that the interviewees are

reflecting on sources of evdicne but they are not recognising that they are indeed reflecting and incorporating the use of the evidence. As part of the interview i have made these descriptions that are tacit and have brought them to there conciousness...ie I have acknowledged that they have reflected and called it that..the interviewees then realise that yes of course they have been reflecting.

Posted by profdocigo at 02:20 No comments:

Appendix V: Interview Schedule and Guide

Interview Structure

Phase I Introductions

- **Purpose**
- **Rapport**
- **Structure**

Phase II Central research areas (easy questions, detail)

- **Main questions**
  - Detail (going after the parts)
  - Depth (meanings)
  - Vividness (anecdotes and stories)
  - Nuance (shades of grey)
  - Richness (elaborate)

- **Follow up questions**
  - Explore

- **Probes**
  - Continuation
  - Elaboration
  - Clarification
  - Attention
  - Steering
  - Evidence
  - Sequence
  - Slant

Phase III In depth research area (harder questions, depth)

- **Main questions**
- **Follow up questions**
- **Probes**

Phase IV Toning down session (reduce emotional level: less stressful questions)

- **Main questions**
- **Follow up questions**
- **Probes**

Phase V Closing the interview

- **Disclosure**
- **Feedback**
- **What next**

Interview Guide

The aim of this phenomenological study is to explore and describe the experience of physiotherapists practising EBP.

To gain an in depth understanding of how they make decisions in applying these principles in the real world of clinical practice.

To explore physiotherapists' perceptions of practising the phenomenon of EBP.

To provide a description and interpretation of how they connect their knowledge of EBP in clinical practice.

Phase I

- Introduction to ethics
- Rights of the interviewee
- Dealing with confidentiality
- Develop a rapport
- Description of career pathway
- Current area of work
- Responsibilities and role of current job
- Current physio interests

Phase II

- What does EBP mean to you?
- Experiences of EBP at college
- Experiences of using EBP in clinical placement:
    a. As a junior (examples)
    b. As a senior (examples and anecdotes)
    c. Experience of EBP over time and expertise
- What is evidence?
- Types of evidence used in clinical practice
    a. Experiences and examples of this
- Experiences of practising EBP in clinical placement
- Triggers for using EBP
    a. General experiences of EBP
    b. Domain 1 opportunity for creating questions
    c. Domain 2 searching for literature
    d. Critically appraising evidence
    e. Applying to practice

Phase III

- Connecting evidence with the patient. EBP and clinical reasoning and decision making. Anecdote examples.
- Clinical decision making: where does your knowledge come from?
- How do you make a clinical decision?
- Explore the process with examples

- How does “evidence” fit into this?
- Conscious of being critical?
- Role of reflection

Phase IV

- Barriers/Drivers to practising EBP
- Influence of other members of the team
- Cultural influences
- Political influences
- Has EBP changed or influenced care?
    a. e.g. changed a decision or modified a decision on presenting evidence
- Use of guidelines and protocols

Phase V

- Disclosure
- Feedback
- Reflections on the interview

Appendix VI: Examplesof Participant Validation

The end of the interview conversation with Rhian

##SV001##
Yeah. Well that's been great. Erm I'm just going to summarise some things to see whether these things are correct really
##PT009##
Yeah OK
##SV001##
Interestingly what I picked up on right from the start was I've found it quite difficult to know whether how you use evidence based practice or not erm and I think that might be and you can agree or disagree with this...might be the fact that because in your early part of your career you weren't doing evidence based practice so much
##PT009##
No I wasn't
##SV001##
...and there are numerous reasons for that which include things like job dissatisfaction and at the end of the interview perhaps because of erm that fact that the culture within the department really didn't enable you to use evidence based practice so as a consequence you have no time, you have no interest in doing it you just wanted to do the job
##PT009##
Yeah
##SV001##
Yeah manage to get home and chill out and relax...but when I probed a bit deeper it seemed that now you are three four years on in your career you have time to relax and ability and also that need and drive to actually you know look at the evidence and when you have that ability and drive to look at the evidence, you are critical of it, you are conscious of being critical of the evidence, you use a toolkit to help you erm erm critically appraise the evidence and when it is something that you are interested in you talk it, that tool doesn't really matter because you have that in your head and you are unconscious of critically appraising and what you are doing is erm using all this different bits of evidence and you are applying it to patients and you are almost reflecting on it to see if it is beneficial to your patients or not and to a certain extent with some of your patients you don't even need to remember the evidence because it is already done as part of the way that you think
##PT009##
Yeah
##SV001##
...and then the last bit I was writing down a few notes which was interesting is that you have a dip in practice in EBP but now that you've got a main influence in using EBP mainly by the driver of the interest in the line of work that you are in
##PT009##
Yeah
##SV001##
I suppose
##PT009##
Yeah I would say that is correct
##SV001##
Erm and interestingly, the culture of the department that you were working in affected your well your ability to like the job and that had a knock on effect on your ability to use evidence based practice in a sense
##PT009##
Yeah
##SV001##
Also which is really interesting to hear is that you use qualitative research as a form of evidence to help you get a better holistic grounded physiotherapy to your patients because it enables you to understand what you're patient are going through and enables you to be more empathetic with your patients
##PT009##
Yeah
##SV001##
So fundamentally that is like a summary of the interview. Would you say that is reasonably accurate?
##PT009##
Yeah I would say that is reasonably accurate

##SV001##
Yep OK. So what I will do now is I will transcribe all of that and will summarise that and give you a list of the points and if you would just like to comment on them to say that it is an accurate representation of what you've said and stuff and that's the end of the interview
##PT009##
Yeah OK
##SV001##
So how did you find it?
##PT009##
It was OK actually

Transcripts were sent to each particpant by email for comment .

From: Simon Igo [mailto:hsx267@coventry.ac.uk]
Sent: 10 June 2010 12:04
To:
Subject: hello

Hi Colin

It was good to catch up with you again last week and thanks for the interview!

You said that you had some further thoughts about the interview and other examples; if you have time it would be good to hear about them. If you'd like to send an email with them that would be great…adds to the rigour of the study!

See you soon.

Simon
Simon Igo MSc. BSc (Hons).PGCert. MCSP
Senior Lecturer
Coventry University
Faculty of Health and Life Sciences
Charles Ward Building
Priory Street
Coventry
CV1 5FB

From: Colin
Sent: 17 June 2010 14:35
To: Simon Igo
Subject: RE: hello

Simon,
Sorry for slow reply.
I had a thought about using national guidelines.
I needed to visit a newly referred 8 month old with cystic fibrosis. We don't tend to see CF, as it's not a life limiting (to within 18 years) or life threatening condition, but this child had other stuff going on, hence we accepted her. I have seen some CF when I worked in [Local Hospital], but on an adult respiratory ward, and that was 3 years+ ago.
I looked online, and found some articles (which I wasn't able to read fully, as discussed in interview), but I also found some national guidelines, including CSP stuff relating to physio techniques which came from the APCP. The guidelines were really helpful as they were recent, and all the evidence had been collated and appraised by a panel of experts in the field, who made

recommendations. For me, this was ideal, as I felt I could just suggest and act upon the recommendations. There was clear advice about the use of postural drainage which was particularly helpful.
Hope this helps

From: Colin
Sent: 14 June 2011 11:47
To: Simon Igo
Subject: RE: research transcript

Simon,
Sorry for slow reply. I have looked through the transcript. There were a couple of bits which I have written in red which may help clarify any points, but on the whole they don't necessarily relate to the ebp side of things. Really interesting to reflect on it, and I think it is a fair reflection of how I do things here, and how my mind works!!!

Appendix VII: Transcript Example with Highlighted Statements

Interview Transcript with participant PT006 and interviewer SV001
Location Leicester January 2010

Age
Sex: F
Number of years qualified: 2007
Current area of work: Cardiac surgery
Qualifications: BSC (Hons) Physiotherapy
Job title: Band 6 Rotational Physiotherapist

Recording equipment
Settings
Time of interview
Number of pages
Time and date of interview
Proof read random sections
Interviewer ID
Transcriber

##SV001##
Thank you for taking part in this interview

##PT006##
OK

##SV001##
We've already talked about ethics so we won't go into that again for the tape recorder, we'll just get straight on into the interview if that is ok?

##PT006##
Alright yes.

##SV001##
Where do you work at the moment and what are you doing?

##PT006##
Erm, cardiac surgery at the XField Hospital.

##SV001##
Ok and how long have you been working there for?

##PT006##
Since Mid December when I rotated there from The Royal (December 2009).

##SV001##
And what grade are you?

##PT006##
Band 6

##SV001##
Ok can you tell me a little bit about your job and some of your current responsibilities?

##PT006##
We see day 1 patients on ITU and follow them through to the ward, and from HDU to the ward and then doing kind of chest clearance and the usual sort of post OP chest routine and then getting them up and exercising and through to sort of stairs for discharge home. I erm also do

cardiac rehab, so I should see some of the same patients coming back and do an hours worth of cardiac rehab. That's sort of the clinical side. I've just had my first student, I help look after the juniors, I've done a bit involved with junior teaching and student teaching. Erm and then there is the ward management role, liaising with my seniors, ward delegation with case load management and liaising with the multidisciplinary team!

##SV001##
Erm and before you went into that rotational post where else have you worked?

##PT006##
Er I did…I got my band 6 in September (2009) and was working at the SACU at the Royal…

##SV001##
SACU being?

##PT006##
Surgical Acute care Unit; before that I was a rotational junior, do you want my junior rotations?

##SV001##
Yes, that would be lovely.

##PT006##
I did the community PCT and before that I was on stroke at the general, before that it was outpatients, before that XField doing the medical respiratory wards and before that was medicine, and just before that…that was my first junior rotation and then I did about 6 weeks on oncology and about 6 weeks on stroke as a bank junior so that's me.

##SV001##
And what is your favourite area?

##PT006##
I'm really enjoying the surgery side of respiratory actually so I really like the progress from; you know, from post op through to home…yes so it is quite interesting.

##SV001##
SO what sort of surgery are you seeing?

##PT006##
At the moment it's just cardiac grafts and valves with a few other interesting things but that is the bulk of it.

##SV001##
Do you get to see any operations?

##PT006##
No, I've not actually.

##SV001##
No not yet?

##PT006##
I've seen ones as a student, orthopaedics but not cardiac ones. I saw a kidney transplant once which was really funky.

##SV001##
Do they still do CABG's on bypass or are they doing them off bypass?

##PT006##
A bit of both but they are often on bypass.

##SV001##
So when did you qualify then I can't remember the year now

##PT006##
2007

##SV001##
2007, OK excellent…so 2 and half to three years.

##PT006##
Yehh!

##SV001##
Has it gone quickly?

##PT006##
In some ways but in some ways not it's kind of bizarre.

##SV001##
And you are beginning to take students as well.

##PT006##
Yes I finished last week with my first student.

##SV001##
How did you find it?

##PT006##
Yeh, OK.

##SV001##
What about the clinical reasoning now you are on the other side?

##PT006##
Erm quite strange but I had KD (Tutor) so I felt quite familiar with her and I knew where I was…sort of thing…so yes it was alright actually.

##SV001##
You said earlier that you have done some teaching, what sort of teaching have you done? In terms of…it was probably in-service training was it?

I##PT006##
In each of my junior rotations you do in-service training for that area and then I did the competencies for the Bird, I did a basic respiratory assessment presentation to orientate students, and then obviously with my student I did a bit of informal chatting of stuff through.

##SV001##
So how did you develop the bird stuff?

##PT006##
I mostly went through Hough (Author) actually and we have our own competencies online so have like the crib sheets that sort of thing and I used my books that I still have from Uni.

##SV001##
Did you do the Bird when you were there?

##PT006##
Yes, quickly sort of thing.

##SV001##
Yes we didn't go into a lot of detail did we?

##PT006##
No

##SV001##
Do you use CPAP?

##PT006##
Yes, yes we do. At the XField we have to set it up, at the Royal then that is the Out reaches role, so it is something that I am just getting my head around again being back at the XField so...

##SV001##
I've asked you this before but what is your favourite area?

##PT006##
Respiratory really, surgical.

##SV001##
You never got into outpatients?

##PT006##
NO! I'm not an outpatient's girl.

##SV001##
Do you think that you will stick at cardio-respiratory?

##PT006##
Yes I think so it is a role that is developing quite a lot and certainly our seniors are doing a lot around the rehab post ITU and I do like the neuro side of it as well and that is quite nice, certainly we have got a chap at the moment who has been there for quite a while who has had a CVA as well, sort of intra-op really so we are trying to balance weaning him and rehab and that really is quite interesting, I really enjoy that and I really looked forward to taking his trache' out for the first time and he talked to me, that was really great! So.

##SV001##
And also you do a fair amount of cardiac rehab as well?

##PT006##
Yes I take one class a week.

##SV001##
OK I'm going to come back to some of the things that you are doing and I'll come back to cardiac rehab a little bit later and I'll probably come back to some of your treatments as well on surgery and respiratory...predominantly what type of treatments are you using on your surgical patients?

##PT006##
We tend to...they are often..sort of..the normal..if you ever a get a normal patient...you know what I mean...the more common patients, they are usually ex-tubated by the time we see them in the morning; so that is pretty much teaching them active cycle, starting them on exercise whether that is marching them on the spot or seated rowing, depending on their cardiovascular instability and getting them out in the chair and the next day it is checking their chest, and you may be considering airway clearance techniques and they may be just fine and you get them up just walking, and then it is progressing their exercise usually. And then you get the odd ones that are not going smoothly, so for them you are more into your suction and inspiratory holds and those sorts of things that are commonly used.

##SV001##
When you say airways clearance techniques which techniques are you using?

##PT006##
Mostly ACBT…I occasionally…I did an AD course recently, I hadn't used my AD since pretty much since we were taught it and I'm starting to use that a bit more, certainly when I was on the surgical wards, because at the Royal I was on the abdominal surgical wards and we were getting…I don't know why really but we were getting a lot of chest clearance issues, I was seeing a lot of Ivor-lewis's with a lot of thoracotamies…perhaps it was because we were getting a lot more complications, but yes I was using more AD there.

##SV001##
Thank you that's great..we're going to focus on a little more of the harder stuff now if that is OK?

##PT006##
Fine

##SV001##
So what does evidence based practice mean to you?

##PT006##
It means using research to inform your practice and to make it more effective.

##SV001##
OK and what do you mean by research?

##PT006##
It can be actual journal articles, whether it is a meta-analysis or an RCT sort of thing, but we are trying to be informed by the recent BTS guidelines and the NSF's and that sort of thing.

##SV001##
So have you looked at the cardiac rehab NSF's in terms of your treatment.
##PT006##

Yes, a bit it's something that is still on my "to do" list.

##SV001##
Do you consider anything else that you would use as evidence, you have said research and you have said RCT's and you've said meta-analysis and you have said guidelines and so on…do you use any other sources of evidence?

##PT006##
I use my books, no not massively; I go a lot on senior input and best practice that goes on, within the unit frankly.

##SV001##
OK when you say that EBP is about using research, if I say to you then what do we mean by best evidence?

##PT006##
It's kind of grading the evidence based on the quality really, looking at the size of the trials, the bias involved and what type of evidence it is and whether it is applicable to your patient group.

##SV001##
Have you used RCT's or guidelines in your practice at all since you have qualified?

##PT006##

Do you mean me specifically or do you mean the team?

##SV001##
Let's start with you.

##PT006##
I can't say that I have massively changed my practice, personally, based on anything that comes to mind, I've kind of learnt stuff if you see what I mean and expanded…

##SV001##
OK what do you mean by that? In terms of that you have learnt stuff and you have expanded?

##PT006##
If you've got something that is bugging you, you kind of go and look it up a bit and expand your knowledge base, it gives you better ideas on how you should approach it, so rather than saying I would usually do this and I'm not going to do it now because something has come out, I might develop a wider range of skills perhaps or another avenue or something like that.

##SV001##
OK can you give me an example where something has bugged you and it's not working for example, from your practice where you have gone away and used some sort of knowledge to help you make a decision?

##PT006##
Erm….

##SV001##
I said it would get harder!

##PT006##
Yes let me think…(long pause). Whilst I was on outpatients I had quite a lot of shoulders and I was doing in-service training on the evidence for exercises for the shoulder, and there was…I can't remember what it was but there was some papers on using more than neuro aspect, in terms of providing feedback and stability and that kind of aspect…so that was something, I did somebody with a c-spine/shoulder kind of issue that I got quite a long way with, it was something that was had been going on for quite a while, I covered quite a few things but we weren't quite back to contra lateral function if you see what I mean. And then I used that quite a bit with him but then I rotated and passed him on so I didn't quite see what happened in the end.

##SV001##
But you looked at some papers to help you treat that patient so to speak?

##PT006##
Yeh yeh

##SV001##
Can I just talk through that process then on what you actually did? And I think it is important for me to say that there are no right or wrong answers; I'm just really interested in what you think and your experiences of what you've done. So you know that I'm interested in EBP so you don't have to say well oh my goodness I should be doing this and I'm not…so what I'm interested in is…what you are actually doing…

##PT006##
Ok yeh…

##SV001##
So, can I just talk through with you then, this patient with the shoulder and you said you had some papers and so on, I'm not interested in the names of authors etc but can you remember the sort of paper that it was? The papers that you looked at?

##PT006##
Erm…they were…we struggle to get access to a lot of the journals…you know you might do a search and come up with a lot of things that look cracking, but we really struggle to get at them, because of XXX's affiliation with the medical school, it's much easier to get access to the medical type papers so you get quite a few from that aspect, and then you are almost kind of, and then the papers are less relevant or they are case studies, and so you end up almost trying to deduce what they were getting at and almost translating that to physio, does that make sense?

##SV001##
Yes it does.

##PT006##
But there were some cracking ones and there were a few kind of, heads up, because I was doing the in-service somebody else had been to a conference and had seen some good papers so we then kind of chased them down, but yes I ended up with quite a lot of papers and reading them and hunting through with the relevant bits of information.

##SV001##
Ok I want to pick up on a few of things that you have just said then, you said that there was some cracking papers, and as you have read through them these papers have helped you treat you patients. How did you know that they were good?

##PT006##
A; they were more relevant and B: they weren't just one case study, because some papers, were quite…were addressing the issues that I wanted to…learn about…but they'd say one professional tennis player or something and they then had access to that patient everyday for four hours a day and that's not just something that you can do in an NHS setting, you've got half an hour a week sort of thing. So yes there were ones that were more relevant and had a larger number of participants which made it more credible.

##SV001##
OK you've said a lot of things there including the relevance of the paper to your patient group and you also started to talk about the number of people that were in that paper in terms of the credibility. Were there any other things that you were looking for whilst you were reading the paper?

##PT006##
It all rather depends as to whether they were looking at the same patient group as I was…

##SV001##
Yep…

##PT006##
You tend to find papers that were looking at post op rehab and that is not my patient group and so there are sometimes things that you can translate across, because you can look at it in…ok these guy's post op might have had post op instability, my guys has got shoulder instability and so if these were exercises that were valid for that then it might be worth a shot with my guy, if you see what I mean…I forgot what I started the sentence with!

##SV001##
Did you look at anything else within the papers? You know you have talked about how you can relate this paper…you know they were tennis players so you could actually relate it to your group of patients and you also talked about what was the other thing you said…that that that the numbers of people in your study…was there any other aspect of the paper that you looked at? To judge whether it was a cracking paper or not?

##PT006##

We kind of...the whole sort of...the outcome measures whether they demonstrated any difference, is it something that sounds feasible, is it something that I can do in practice, is it the right sort of patient group, have I a chance of making it work? So that sort of thing.

##SV001##
That's great that's really good actually...I want to explain what you are doing but I can't at this stage because it will ruin the interview...can you explain to me how did you know, when you was reading that paper, those were the sorts of things that you should be looking at?

##PT006##
How do I know how to analyse a paper?

##SV001##
Yes! Because you seem to be doing it...

(timidly) Because you taught us!

##SV001##
OK, can remember anything specific that's enabled you to...because I'm assuming that you didn't use a checklist?

##PT006##
No not specifically, but I have seen quite a few of those around, no I don't specifically, I tend to make annotations around the paper rather than actually kind of...XX has been doing quite a lot of work on the standards based on the BTS and she's talking about that quite a bit and she's been using it and that has been more rigorous, but when I'm just reading something for me I'm just sort of tick it off, the big categories in my head if you see what I mean.

##SV001##
I do! I know exactly what you mean. So when you are actually reading the paper, would I be right in saying that you'd be reading through it, you've got these categories in your head that you are applying to the paper...

##PT006##
Yeh

##SV001##
Are you thinking about those categories in your head as you read the paper or are you just doing this automatically?

##PT006##
I think I've changed the way in which I read papers based on what we did at Coventry, in that before that, because I did a previous degree I'd read stuff before, I would always read it straight through, but I've changed that and I tend to read the abstract and then kind of look at very bits, I might leave the introduction and have a skim over how they recruited how many they had and then depending on what I'm thinking as I go on, I kind of skim around the results and discussion to see...it's probably more of a time thing, before you've got time and you definitely want to know everything in this paper. But certainly if I'm reading something in an evening or trying to have a quick skim through while I've got 20minutes on a computer, you kind of...you have to...sometimes you become a bit lazy and read the abstract and then decide that this isn't relevant and move onto the next one...so I think that changed because of the EBP module and I then I kind of...I remember using the PICO and I use that...but not quite in the sense in which...we were taught it as to how to write a question. But I use it as a quick little summary on the top. So what patients were they looking at what was their and literally just use that and then a nice summary, if I've got to read a few papers and come back and refer to them then I've got to remember which one was which and that kind of and then I annotate all the way through to highlight if they've done any randomisation if they've attempted to reduce bias, size of their groups, how many they had at the end, if they have started to go on about power. Because those to me are flags that they have taken this quite seriously and had a good go at it.

##SV001##
And again you're not using a checklist, it's all in your head as you go through and do it...

##PT006##
Yes...

##SV001##
But let me just go through this again as this is quite fascinating for me really, when you're reading the paper and you're critically appraising the paper in the way that you are doing it are you consciously thinking about the critical appraisal process or is something that is just automatic. Similar really to when you assess a patient it becomes an automatic thing that you do.

##PT006##
It is almost that...I'll read and read and read and then I'll see...almost like the buzz words it clicks on, if that's makes sense, so they'll go on about randomisation and I'll go "AHA!", and then you read on, and then you'll see something else and you'll go "AHA!" and on you go, so it's almost like it switches on as I'm reading through it.

Long pause...

##SV001##
That's really fascinating, this is really good stuff! Do I want to ask any more about that? We've covered quite a lot...and you do this with most of the papers that you read then?

##PT006##
Yes and we do journal club sort of different places do it at different times; certainly at the moment we are doing it every month and because of XX's increased insight in having done all this BTS stuff, we then as groups take it away and appraise it yourself and then come back and discuss it, and then as a group we kind of label it as to what level of evidence we would rate it and how much notice we are going to take.

##SV001##
So at a group level you talk about you doing it, reading articles and then you do it in groups as well?

##PT006##
Yes

##SV001##
And is that a more formal critical appraisal process?
##PT006##

Yes I think we have done a couple just recently, somebody else has done one as well and they will have the sheet, the tick list, more sort of formalised the discussion else you will and can start rambling off in different directions...and yes we have kind of almost agree on the criteria but then we would be chatting around how we can apply this to practice and what we can do and is it out of our scope, whatever and then at the end we try to categorise the level of evidence.

##SV001##
Yes ok when you talk about categorising levels of evidence what do you mean by that?

##PT006##
There's...the normal sort of thing about the grades of evidence, certainly what I covered at Coventry, but there is something else that has come up recently, it's come across my path recently anyway about being a 1a or 1b or a 2a or whatever, and XX has introduced me to that and it is becoming more common practice in the XXfield journal club.

##SV001##
Ok so when you use this category, 1a 1b and so on, does that enable you…when you look at the highest level, does that enable you then to get that information from that paper to your patient group?

##PT006##
Erm…it almost gives us more justification particularly if there's an issue that you need to tackle…other…you know if there are financial or changes to practice or anything like that. Which I'm not doing a lot of at band 6 level; it's more the band 7's and 8's that go and discuss with others…

##SV001##
So if it's high level of evidence as a group…

##PT006##
Yes we will do something more with it…

##SV001##
And if it's a low level study with poor internal validity then you wouldn't do so much with it…that sort of thing?

##PT006##
Yes

##SV001##
OK individually then once you have made up your mind that the study that you are reading is a good study, then how do you decide to use that.

##PT006##
It depends it is not always that easy as you would think in some ways as there is so much to change, in some ways. We started looking at…no sorry that's a group thing…it depends on what you are talking about and what your journal is; whether it is something that you can implement or whether it is not…which can be a stumbling block.

##SV001##
So are you saying that there are political things that stop you from using that evidence or there are other things that would stop you from using that evidence on that patient?

##PT006##
Yeh if there…you know it's getting the time or a new piece of kit that somebody is saying its bells and whistles and you haven't got it.

##SV001##
Form a study that doesn't need all of that once you've read the article and done your critical appraisal in your head and you've…. And it seems that what you want to do on that patient seems to be justified, what's the next step that you take?

##PT006##
Have a bash! And see if it works or not and sometimes certainly going back to the shoulder thing, I tried that with him and I got some reasonable results and I sort of tried it with other people, but it's a bit.I'm probably, I feel a little under confident to try…so I try it a bit and see how it goes and then if it's successful we'll add it in and things. It depends on who you have got and that sort of thing.

##SV001##
And then on subsequent patients

##PT006##

Yeh you might give it a try.

##SV001##
But then are conscious of the evidence that you have used or is it drifted away into the ether?

##PT006##
Sometimes..yeh yeh, but I think you tend to forget, you came away and you use it for a while and you kind of…you look up some of the stuff and it says that it is good, you perhaps lost the details of who did what and..and..and yes it would probably be better because you would understand and would be able to justify to somebody.

##SV001##
But if something did go wrong with a patient, based on what you had just done, would you find it difficult to track back to find a particular article to help to support you decision on treating that patient. What do you think?

##PT006##
No because I keep everything, big piles of paper I've still got them so I would be able to find it.

##SV001##
So basically you appraise an article you've got it somewhere, you apply it to your patient you have a play to see if it works and If need be you know where to go back to find your article and critically appraise it again. In the mean time you continue to use that same technique, what you are doing really is that the knowledge you've got that comes from that paper becomes part of your knowledge and becomes part of you I suppose…

##PT006##
Yeh, yeh…

##SV001##
Is that right?

##PT006##
Yes it does.

##SV001##
Yes?

##PT006##
Yes.

##SV001##
OK, just quickly switching to the group one again, did you just read the BTS guidelines and apply them to practice or do you critically appraise them?

##PT006##
I think we went through them and XX more or less talked us through a bit of background why they come to those conclusions.And then we are writing standards from them so then we can implement practice according to our standards and then audit against our standards, because you can't audit against a guideline we need to have a….

##SV001##
Set of standards…

##PT006##
Yes

##SV001##
So that you audit against those standards

##PT006##
Yes and they have just been written and are now making it into practice but yes we are starting to expand things.

##SV001##
And the things like the guidelines are based on evidence and other sources of evidence; do you look at the sources of evidence that informs the development of the guidelines? And or do you also critically appraise the guideline as another piece of evidence that you need to critically appraise before you apply it or as a group or individually do you, say "OK BTS guidelines have been written then let's look to see if we can use them?

##PT006##
I think that I pretty much trust them because in many ways they are like an ultimate meta-analysis, but also everything in there seemed pretty reasonable and not too much of a stretch if you see what I mean and I think then if there was something in there that didn't look reasonable then…because you can then look at the references and work out why though. Certainly I would take them at face value.

##SV001##
And you trust them?

##PT006##
Yeh

##SV001##
Are there any other guidelines that you have done the same thing with?

##PT006##
Erm…sort of…erm…NSF's that sort of thing coz they are more what we are working towards, where these are more what we should be doing, if that makes sense.

##SV001##
Yep, You talked a little bit about PICO earlier!

##PT006##
Yes! Yes! I like that!

##SV001##
And you use it in practise yes?

##PT006##
Yes.

##SV001##
How do you use it in practise?

##PT006##
I use it as a summary tool rather than how to write a research question which is how I was taught at…so who were they looking at how many have they got, possibly I might even write next to…whether they're…in what environment or something, so it might be like 40 tennis players or 30 ITU discharges or whatever, so it's just a quick summary to me. PICO I look at the intervention and then use the compare…whatever the two groups are comparing at, and then outcome I would sort of what they found, sort of outcome measures so if they found an outcome measure was better then I'd sort of "undecipherable" a little may be a sentence. So for me that's a little short summary so I remember.

##SV001##
Do you use it to help you search for literature?

##PT006##
No, but I've not had great results from searching and I've got a bit disheartened, if I'm honest about trying to find things, so I've searched on the CSP and stuff like that, and I certainly try...and I've done reasonable by sticking a question into google to get papers like that because it is a nice easy way to find things that I can actually access.

##SV001##
General google or google scholar?

##PT006##
A bit of both, I try the library but you hit brick walls because you just can't get the journals and you go round in circles, putting your Athens log in in, just not quite getting there, and equally I don't get...when I was a student you could sit down for a good couple of hours in the library and have a really good run at it, I'm often trying to do things in and out, which can be a bit frustrating.

##SV001##
So you use the quick option and use google.

##PT006##
Yeh...

##SV001##
Erm which data base do they use at the hospital.

##PT006##
I think we've got EBSCO, and I did actually...a long time ago we did have training form the library and we do have a dedicated librarian who will do things for us, but it's not something that I use in earnest.

##SV001##
Did you use EBSCO at Coventry, I don't think...

##PT006##
I think we did in the 3rd year...we changed over I think...but yeh compared to the university it is much harder to find the papers and I think that's why I got disappointed with it, I found it quite frustrating at Uni, there were so many papers that looked good and I had to use the document supply thing to get the ones that I wanted...now I'm just to tight to pay (laugh).

##SV001##
I suppose it is not so important now is it? In terms of you...your patients are important where as in college your mark was important.

##PT006##
Yeh Yeh...but I think that can change as you move higher up...certainly my seniors are doing a lot more than that. Somebody is doing a masters and so has access to Uni type stuff to be able to access everything again.

##SV001##
I could send you an EBSCO work sheet if you like; it's quite nice to work through.

##PT006##
Yes please, thank you, half my problem though is getting hold of the journals.

##SV001##
OK, we've talked about different types of evidence and you have mentioned RCT's, you've mentioned guidelines and meta-analysis, are there any other sources of knowledge that you class as evidence...you said earlier maybe seniors, do you class that as evidence or are there any other things that you class as evidence?

##PT006##
In a practical sense my seniors represent the resource that I most often access when I need more information, if you see what I mean, and they are often my first port of call than to go and look something up. You know in a practical sense my next port of call is books and I get books out the library and that sort of thing which can be good but can be ancient as well...

##SV001##
So you obviously value your seniors knowledge, how do you use that knowledge how do you use that knowledge in practice?

##PT006##
The knowledge from them?

##SV001##
Yes

##PT006##
It's kind of expanded my skills I've looked at situations in how wide to push when parameters aren't normal and that sort of thing…

##SV001##
Do you get evidence from seniors in terms of their knowledge of RCT's meta-analysis or systematic review evidence? Have you noticed that at all?

##PT006##
They tend to use more…you more often hear them sighting guidelines and more those sorts of evidence rather than a specific paper…but then again the reason why I go to seniors for is for the more practical stuff rather than better practice…well actually it's the same thing (confused), but yeh its perhaps hands on more direct questions rather than a more…if I wanted a book or a research question it would be a more general question where I want a specific well this patient what do i do next or what could i have done sort of question if you see what I mean.

##SV001##
I'm going to take you back a little bit now to when you were at college, you obviously remember doing a little bit of EBP in your first and second year, and then your research project in your third year…How did you value EBP then?

##PT006##
I didn't mind it it was quite uhm…I've probably got that sort of geeky mind (laugh) I don't know if it has changed but in the first year you had to do a research outline, and I got, I'm that sad, I got into it, and I remember doing it over the Easter holidays and I got that into it that I then did that as my dissertation.

##SV001##
Right that's really good.

##PT006##
Because I just got really interested in the question in the evidence and equally it seemed like a canny thing to do, because you have done half the work but I did just get really interested. The second year one was quite interesting in terms of the analysis of the papers and I don't think that I knew that much with things like the reliability and that sort of thing and didn't really know that much about the qualitative type of data which is more what has to happen in the real world, so yes I found it reasonably interesting and reasonably relevant and things.

##SV001##
And when you went out into clinical placement in the second year, did you use EBP then in anyway?

##PT006##
I used a shed load of journals to back up my clinical reasoning, so I'd find quite a few for each of my topics, so I'd try and find something to back up...because I found the introduction sections really quite useful if you want the increased knowledge because I remember doing something about neglect and there was a really nice summary on the different types of neglect so I used it for that but I also used it support...I can remember doing my respiratory clinical reasoning and I was doing weaning and exercising so I was kind of looking at journals that supported my use of exercising in the ITU and the different...and the arguments that were going on in the literature around it and then the exercising on the ward post op, post op complications...both going into the medical side of it for knowing what the normal rates are, and kind of the physio intervention using...finding a journal or a few on each of the things that I am likely to want to discuss to kind of give me a rounded knowledge.

##SV001##
What were the issues with the papers on ITU and exercise?

##PT006##
There were different ones about as to whether you should and how you should achieve it, there was one about how they wanted you...there was some debate about them and I think some of them were a bit older they were looking back and they were going on about that if you march somebody you'd be more likely to make them breathe more apically and therefore you are just increasing the ventilation of ...you are not using it to reverse basal atelectasis and that sort of side of it.

##SV001##
And that was back in the second year?

##PT006##
No that was the third year.

##SV001##
OK have you used that then...your knowledge of clinical reasoning and the use of those papers?

##PT006##
Yes because I have read it all again before I had to do my clinical reasoning for my placement and patient and I was not comparing my student to me, but it was quite interesting to see how I had prepared for a similar clinical reasoning it was quite interesting as well. But yes I try to write a lot of notes when I learn stuff...so they are quite synopsis and it was quite nice to go back to those to refresh everything in my brain for clinical reasoning.

##SV001##
And remember how you were reading with those trigger points...

##PT006##
Yes that is what I do...

##SV001##
And is that what happened when you were reading those papers as well?

##PT006##
Yes because I found the summary sheets and I've got the author and the journal and then I've got my PICO and then I've got my relevant findings, I've almost got half a side of each journal that I then sort of learnt for my clinical reasoning.

##SV001##
What were the main drivers then for you picking up those articles for your clinical reasoning?

##PT006##

To support…to support…the whole point of clinical reasoning is that you justify your treatment and why you are doing it, so I was able to cite research to back up why it was I was doing for what I was doing.

##SV001##
But were you doing it for your clinical reasoning or were you doing it for your patient?

##PT006##
It probably happened, in all honestly retrospectively, I did whatever I did with the patient and then went away and read but I found that I learnt a phenomenal amount by doing this with clinical reasoning, and I actually did quite a lot of work during the placement and try and expand and I learnt so much.

##SV001##
So you used the clinical reasoning as a tool to learn as much about your patient then?

##PT006##
Yes. Because of the logistics of having to have time to read up you've often discharged them perhaps from physio on like the third week or something but then you've still got the second part of your placement. You're treating patients who are probably similar whilst you are doing the reading that informs my practice, and A made me realise what was going on with the patient and in an MDT sort of way, because once you have looked up what the surgeries mean you can then understand the surgeons notes and stuff and then do more like that.

##SV001##
Were there any other drivers as to why you picked up the research for your clinical reasoning?

##PT006##
Apart from the clinical reasoning!

##SV001##
Yes…just pass?

##PT006##
No I wanted to do well.

##SV001##
I think that's what most people would say…but it is quite interesting that…could I just ask you then what was the biggest driver? Marks or the fact you were helping with patient care or your learning?

(A long pause)

##PT006##
I don't know…probably all three. But probably…one of my biggest things was that I wanted to be a good physio. So I wanted to learn as much as I could, but equally and particularly in those early…because I can still remember the names of those first patients that I treated on my first placement. Those first patients really matter and so I did really want to do right by them, but I think I was more. Because I was supervised and I trusted my educator I perhaps didn't think that I needed to turn to research in order to treat because I knew they were making me safe, it was more of the case that I turned to research to understand what I was doing and why I'm doing it and I would have that knowledge so on graduation day I would be as good a physio as could be.

(Long pause)

##SV001##

You talked a little bit about qualitative research, have you used qualitative research in your practice at all?

##PT006##
We have used quite a few of the questionnaires and things and outcome measures and that sort of thing. So I have come across it from that side of it. A bit of patient experience sort of thing but that would be it ...I tend to go more with the quantitative and that would be it.

##SV001##
And how important do you think your clinical decision making is in terms of the sorts of evidence. Do you see it as a source of evidence…your experience?

##PT006##
It's what happens in truth but if I ever had to stand up and deomstr…you know…then I would be happier if I had some research that I could cite, because to me that would validate what I'm doing.

##SV001##
And for you, just to re-iterate, an important source of evidence for you to use are good strong experimental studies of some description?

##PT006##
Yes and guidelines because if I'm doing what the CSP or the NSF's tell me what is should be doing then to me that is backing up what I should be doing.

##SV001##
What about reflection do you see reflection as part of the evidence based practice process?

##PT006##
Uhmm…reflection is something that I use, but technically it is not something that I see as EBP. It's part of developing as a person and part of learning and you might go off and reflect to gain a wider knowledge, but I'm not sure that I see reflection as part of…

##SV001##
Do Do…based on our discussion do you think that you reflect on the evidence at all in any way.

##PT006##
Uhm to some degree yeh may be a bit (hesitant)

##SV001##
A bit but not a lot?

##PT006##
Sigh…no not a..no I probably do what I do based on what I have learnt and what practice is if you see what I mean and I know practice is based on evidence but directly I probably don't reflect on what the research tells me to do…daily.

##SV001##
OK that's interesting only because that for most of the interview, you have been quite reflective and you've been reflecting on the evidence, thinking about how you use evidence and how you apply it…

##PT006##
Yehhh

##SV001##
Maybe you reflect without knowing tacitly?

##PT006##

Hmm possibly (not convinced about this).

##SV001##
I raise that because I think it is quite interesting, I think people often see reflection as a process.

##PT006##
As something you have to write up!

##SV001##
Yes where as maybe reflection is about…well I've got this piece of evidence and I need to think about whether I could use this or not on this patient and I am going to use it and I am going to try it and I am going see if it will work. And for some that's part of the reflective cycle.

##PT006##
Yes yes!

##SV001##
I'm leading you there a little bit but I think it's quite interesting…

##PT006##
It's probably because I see reflection as the other way round, if you see what I mean…

##SV001##
Yes I do…

##PT006##
Because I see reflection as something that happens and I'm going to reflect on it and learn from it…

##SV001##
Almost like a backward reflection rather than a forward reflection.

##PT006##
Yes

##SV001##
You reflect on the event afterwards?

##PT006##
Yes

##SV001##
As opposed to reflection in action when you are actually treating the patient? I mention it because how do you actually apply evidence to your patients…you have a systematic review and a meta-analysis, an RCT and guidelines…you've got all of those and you've got your practice experience as well and you've also got your seniors advising you…at some point you have to make that decision on how you are going to treat the patient based on all of those different sources of evidence. And I wonder if you reflect and think about those sources of evidence, integrating it and then applying it to your patient.

##PT006##
Hmm, I don't know because in reality you mostly crack on..and …yeh I don't know how much I understand assess and do…because you do. I couldn't tell you that I … yeh I will reflect all day, if you see what I mean, but you don't feel like that you are reflecting so you can't think back to how you did it because you are not really aware of doing it.

##SV001##

We're just going outside of the remit of the interview at the moment, but when you actually read those papers and you get those triggers, that is a form of reflection because you are thinking about those triggers.

##PT006##
OK because you are reflecting about what you are reading…yes..yes I think that I am probably thinking about reflection as…

##SV001##
…A traditional University lets write a reflection about…

##PT006##
Because I still do those and things but I probably labelled reflection as that.

##SV001##
OK thank you that's brilliant we've almost finished! Really we've mentioned a lot of these anyway but what are things that stop you from doing EBP.

##PT006##
Time, access to resources, the quality of the evidence, sometimes you can search and there is just nothing answering the question that you want to ask. There's a lot of physio research that isn't, completely, the quality it should be…and erm..I think that there is a lot of…erm..if you ask a really specific question that you can absolutely produce a scientific answer, it becomes a lot less relevant to the actual world, because sort of going into ITU if you can actually get 20 no say 40 ITU patients, having the same thing having the same ventilations you can actually do two different streams of rehab then you never get a patient that is in the right box to be completely valid. So it's a lack of evidence to answer the debate. But I think it will come and that's the interesting stuff.

##SV001##
Have you had any cultural challenges or…what I mean by cultural challenges I mean in terms of within your department any political issues about practising EBP, either that's driven you or hindered you in doing EBP.

##PT006##
Erm…not overly within the department I don't think…we had an issue about cuff pressures on whether we should be measuring and whether that is our remit. What was the evidence for the evidence for damage for having the wrong cuff pressure? So as a physio team we kind of took…I don't know…somebody did source some articles that we had to read and then we came back and came a conclusion, but then trying to implement that…we were not the one's buying trache's or not putting them in that sort of thing. It's quite an interesting thing and yes politically cuff's are something that we take down and put up and check. It's not us deciding what to put in so that becomes a political issue. And I was conscious that the seniors were managing how they replied to these questions so not to get knee jerk answers and that sort of thing. So yes I haven't seen it massively within the physio team but I have seen the politcals outside.

##SV001##
And I know that…do you feel that EBP actually influences patient care from your experiences?

##PT006##
Yes because we do stuff.

##SV001##
Because you change practice?

##PT006##
Yes, and we improve and things like that.

##SV001##
And I suppose the final question is how do you know that EBP is influencing and affecting patient care?

##PT006##
Erm a recent example, the BTS guidelines are going on about how we should be assessing incontinence. And that is something that is just coming in and started to be talked about in respiratory and certainly when I was doing it 18 months ago that was something that wasn't mentioned so that was something that has come up and it is quite a big issue from what I understand and I would imagine that there are quite a few patients that could be helped by some input on that so to me that is…it proves to me that stuff happens.

##SV001##
Thank you is there anything else that you would like to say at all.

##PT006##
No, I'm happy.

##SV001##
How did you find the interview?

##PT006##
Fine alright.

##SV001##
Hard in parts? Challenging or not?

##PT006##
Interesting to think about stuff.

##SV001##
Did it get you to think?

##PT006##
Yes, I was thinking before I was coming about do I do this you know.

##SV001##
Yeh

##PT006##
What was that EBP module? (laugh)

##SV001##
What's been fascinating to hear is how you implement it in practise and what you are actually doing in practice. EBP is supposed to be a conscious activity, so you need to be judicious and conscious about the use of evidence so you should be thinking about the use of evidence. So ideally you should be using checklists because it raises that level of consciousness, but it seems what you are doing is that you have that check list inside your head, it's part of you and it is there and when you read the articles it automatically triggers those points. That's really interesting because the EBP seems to be more tacit…you do it without thinking as opposed to being a more conscious approach, Interesting because it perhaps shows a move from becoming a novice towards an expert, because you no longer have to have checklists which is what we have been finding with these interviews.

##PT006##
Ok thank you

##SV001##
Thank you!

Appendix VIII: Example of Selected Statements and Created Meanings for Each Statement

Line Identifier	Significant Statement	Meaning of Statement
HM 449-462	##SV001## I do! I know exactly what you mean. So when you are actually reading the paper, would I be right in saying that you'd be reading through it, you've got these categories in your head that you are applying to the paper… ##PT006## Yeah ##SV001## Are you thinking about those categories in your head as you read the paper or are you just doing this automatically? ##PT006## I think I've changed the way in which I read papers based on what we did at Coventry...	Education in EBP principles changes the practice of reading papers.
HM 463-486	... in that before that, because I did a previous degree I'd read stuff before, I would always read it straight through, but I've changed that and I tend to read the abstract and then kind of look at very bits, I might leave the introduction and have a skim over how they recruited how many they had and then depending on what I'm thinking as I go on, I kind of skim around the results and discussion to see…it's probably more of a time thing, before you've got time and you definitely want to know everything in this paper. But certainly if I'm reading something in an evening or trying to have a quick skim through while I've got 20 minutes on a computer, you kind of…you have to…sometimes you become a bit lazy and read the abstract and then decide that this isn't relevant and move onto the next one…so I think that changed because of the EBP module and I then I kind of…I remember using the PICO and I use that…but not quite in the sense in which…we were taught it as to how to write a question. But I use it as a quick little summary on the top. So what patients were they looking at what was their and literally just use that and then a nice summary, if I've got to read a few papers and come back and refer to them then I've got to remember which one was which and that kind of and then I annotate all the way through to highlight if they've done any randomisation if they've attempted to reduce bias, size of their groups, how many they had at the end, if they have started to go on about power. Because those to me are flags that they have taken this quite seriously and had a good go at it. ##SV001## And again you're not using a checklist, it's all in your head as you go through and do it…	Education in EBP principles changes the practice of reading papers. Time to read papers influences the nature of reading articles. Education in EBP principles changes the practice of reading papers. Time is a factor that influences the nature of reading articles. PICO is used to summarise the content of articles Conscious critical appraisal based on learning and tacit internalised knowledge.

	##PT006## Yes…	
HM 496-500	##PT006## It is almost that…I'll read and read and read and then I'll see…almost like the buzz words it clicks on, if that's makes sense, so they'll go on about randomisation and I'll go "AHA!", and then you read on, and then you'll see something else and you'll go "AHA!" and on you go, so it's almost like it switches on as I'm reading through it.	Internalised "hooks" trigger the conscious use of critical appraisal.
HM 508-513	##PT006## Yes and we do journal club sort of different places, do it at different times; certainly at the moment we are doing it every month and because of XX's increased insight in having done all this BTS stuff, we then as groups take it away and appraise it yourself and then come back and discuss it, and then as a group we kind of label it as to what level of evidence we would rate it and how much notice we are going to take.	Evidence is critically appraised departmentally and individually. Shared approach to EBP. Organisational behaviour supports the development of EBP
HM 522-531	##SV001## And is that a more formal critical appraisal process? ##PT006## Yes I think we have done a couple just recently, somebody else has done one as well and they will have the sheet, the tick list, more sort of formalised the discussion else you will and can start rambling off in different directions…and yes we have kind of almost agree on the criteria but then we would be chatting around how we can apply this to practice and what we can do and is it out of our scope, whatever and then at the end we try to categorise the level of evidence.	Checklists are used within groups. Consensus agreement formalise the EB decision making process. Organisational and departmental culture drives the implementation of EBP.
HM 536-551	##PT006## There's…the normal sort of thing about the grades of evidence, certainly what I covered at Coventry, but there is something else that has come up recently, it's come across my path recently anyway about being a 1a or 1b or a 2a or whatever, and XX has introduced me to that and it is becoming more common practice in the XXfield journal club. ##SV001## OK so when you use this category, 1a 1b and so on, does that enable you…when you look at the highest level, does that enable you then to get that information from that paper to your patient group? ##PT006## Erm…it almost gives us more justification particularly if there's an issue that you need to tackle…other…you know if there are financial or changes to practice or anything like that. Which I'm not doing a lot of at band 6 level; it's more the band 7's and 8's that go and discuss with others…	The GRADE system is used to justify the use of evidence on patients. Symbolic use of evidence is made by higher level colleague in respect to economic decisions.
HM 553-564	##SV001## So if it's high level of evidence as a group…	Hierarchy of evidence is used to make decisions relating to patient

	##PT006## Yes we will do something more with it… ##SV001## And if it's a low level study with poor internal validity then you wouldn't do so much with it…that sort of thing? ##PT006## Yes	care.
HM 567-582	##SV001## OK individually then once you have made up your mind that the study that you are reading is a good study, then how do you decide to use that? ##PT006## It depends it is not always that easy as you would think in some ways as there is so much to change, in some ways. We started looking at…no sorry that's a group thing…it depends on what you are talking about and what your journal is; whether it is something that you can implement or whether it is not…which can be a stumbling block. ##SV001## So are you saying that there are political things that stop you from using that evidence or there are other things that would stop you from using that evidence on that patient? ##PT006## Yeah if there…you know it's getting the time or a new piece of kit that somebody is saying its bells and whistles and you haven't got it.	Financial and economic constraints preclude the implementation of evidence into practice.
HM 584-595	##SV001## From a study that doesn't need all of that once you've read the article and done your critical appraisal in your head and you've…. And it seems that what you want to do on that patient seems to be justified, what's the next step that you take? ##PT006## Have a bash! And see if it works or not and sometimes certainly going back to the shoulder thing, I tried that with him and I got some reasonable results and I sort of tried it with other people, but it's a bit, I'm probably, I feel a little under confident to try…so I try it a bit and see how it goes and then if it's successful we'll add it in and things. It depends on who you have got and that sort of thing.	Evidence from papers is applied to patients through trial and error (active experimentation) (NOT by hierarchy).
HM 600-610	##PT006## Yeah you might give it a try. ##SV001## But then are conscious of the evidence that you have used or is it drifted away into the ether? ##PT006## Sometimes. yeah yeah, but I think you tend to forget, you	Evidence is incorporated into personal knowledge, internalised, becomes tacit and applied to similar patients. Evidence becomes clinical experience

	came away and you use it for a while and you kind of…you look up some of the stuff and it says that it is good, you perhaps lost the details of who did what and...and...and yes it would probably be better because you would understand and would be able to justify to somebody.	
HM 617-640	##PT006## No because I keep everything, big piles of paper I've still got them so I would be able to find it. ##SV001## So basically you appraise an article, you've got it somewhere, you apply it to your patient you have a play to see if it works and if need be you know where to go back to find your article and critically appraise it again. In the mean time you continue to use that same technique, what you are doing really is that the knowledge you've got that comes from that paper becomes part of your knowledge and becomes part of you I suppose… ##PT006## Yeah, yeah… ##SV001## Is that right? ##PT006## Yes it does. ##SV001## Yes? ##PT006## Yes.	EBP is a conscious process involving critical appraisal, evidence is used on patients and evaluated, evidence becomes part of the therapist's internal frame of reference, knowledge becomes tacit and internalised. Reflection on action if clinical situations dictate the need to revisit learning.
HM 642-655	##SV001## OK, just quickly switching to the group one again, did you just read the BTS guidelines and apply them to practice or do you critically appraise them? ##PT006## I think we went through them and XX more or less talked us through a bit of background why they come to those conclusions. And then we are writing standards from them so then we can implement practice according to our standards and then audit against our standards, because you can't audit against a guideline we need to have a…. ##SV001## Set of standards…	Group critical appraisal of guidelines. Departmental culture supports the implementation of EBP. Evidence is used to develop local guidelines. EBP is used to develop practise at a MESO level. Implementing EBP leads on to active research and audit. EBP drives the clinical research process.
HM 666-678	##SV001## And the things like the guidelines are based on evidence and other sources of evidence; do you look at the sources of evidence that informs the development of the guidelines? And or do you also critically appraise the guideline as another piece of evidence that you need to critically	Guidelines are not critically appraised, they are trusted

	appraise before you apply it or as a group or individually do you, say "OK BTS guidelines have been written then let's look to see if we can use them? ##PT006## I think that I pretty much trust them because in many ways they are like an ultimate meta-analysis, but also everything in there seemed pretty reasonable and not too much of a stretch if you see what I mean and I think then if there was something in there that didn't look reasonable then…because you can then look at the references and work out why though. Certainly I would take them at face value.	
HM 705-716	##SV001## How do you use it in practice? ##PT006## I use it as a summary tool rather than how to write a research question which is how I was taught at…so who were they looking at how many have they got, possibly I might even write next to…whether they're...in what environment or something, so it might be like 40 tennis players or 30 ITU discharges or whatever, so it's just a quick summary to me. PICO I look at the intervention and then use the compare…whatever the two groups are comparing at, and then outcome I would sort of what they found, sort of outcome measures so if they found an outcome measure was better then I'd sort of [undecipherable] a little may be a sentence. So for me that's a little short summary so I remember.	PICO used as a summary tool, not for focusing clinical questions.
HM 718-724	##SV001## Do you use it to help you search for literature (PICO)? ##PT006## No, but I've not had great results from searching and I've got a bit disheartened, if I'm honest about trying to find things, so I've searched on the CSP and stuff like that, and I certainly try…and I've done reasonable by sticking a question into Google to get papers like that because it is a nice easy way to find things that I can actually access.	PICO not used to help to search for literature. Limited success with searching for literature. Google used to search for literature.
HM 730-758	##PT006## A bit of both, I try the library but you hit brick walls because you just can't get the journals and you go round in circles, putting your Athens log-in in, just not quite getting there, and equally I don't get…when I was a student you could sit down for a good couple of hours in the library and have a really good run at it, I'm often trying to do things in and out, which can be a bit frustrating. ##SV001## So you use the quick option and use Google. ##PT006## Yeah… ##SV001## Erm which data base do they use at the hospital.	Obtaining articles remains difficult even with institutional access. Quick and rapid methods of accessing articles is important for the successful application of EBP.

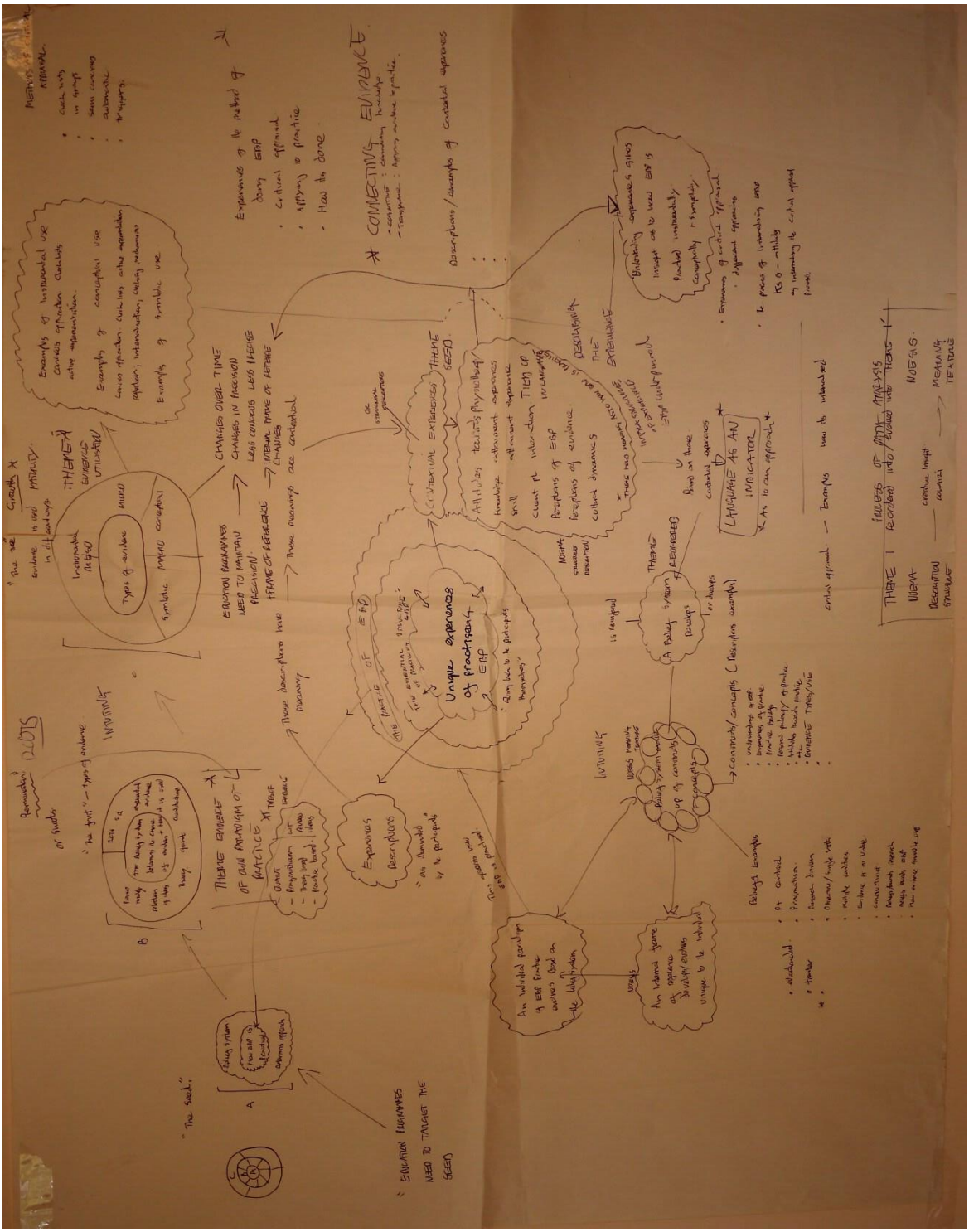
	##PT006## I think we've got EBSCO, and I did actually…a long time ago we did have training form the library and we do have a dedicated librarian who will do things for us, but it's not something that I use in earnest. ##SV001## Did you use EBSCO at Coventry, I don't think… ##PT006## I think we did in the third year…we changed over I think…but yeah compared to the university it is much harder to find the papers and I think that's why I got disappointed with it, I found it quite frustrating at uni, there were so many papers that looked good and I had to use the document supply thing to get the ones that I wanted…now I'm just too tight to pay (laugh).	
HM 772-773	##PT006## Yes please, thank you, half my problem though is getting hold of the journals.	Obtaining articles is difficult
HM 781-789	##PT006## In a practical sense my seniors represent the resource that I most often access when I need more information, if you see what I mean, and they are often my first port of call than to go and look something up. You know in a practical sense my next port of call is books and I get books out the library and that sort of thing which can be good but can be ancient as well… ##SV001## So you obviously value your seniors' knowledge, how do you use that knowledge, how do you use that knowledge in practice?	Knowledge from senior represents a source of practical knowledge. Using evidence by proxy may occur.
HM 814-834	##SV001## I'm going to take you back a little bit now to when you were at college, you obviously remember doing a little bit of EBP in your first and second year, and then your research project in your third year…How did you value EBP then? ##PT006## I didn't mind it it was quite uhm…I've probably got that sort of geeky mind (laugh) I don't know if it has changed but in the first year you had to do a research outline, and I got, I'm that sad, I got into it, and I remember doing it over the Easter holidays and I got that into it that I then did that as my dissertation. ##SV001## Right that's really good. ##PT006## Because I just got really interested in the question in the	Interest in "an area of practice" makes research more interesting.

	evidence and equally it seemed like a canny thing to do, because you have done half the work but I did just get really interested. The second year one was quite interesting in terms of the analysis of the papers and I don't think that I knew that much with things like the reliability and that sort of thing and didn't really know that much about the qualitative type of data which is more what has to happen in the real world, so yes I found it reasonably interesting and reasonably relevant and things.	
HM 837-852	##SV001## And when you went out into clinical placement in the second year, did you use EBP then in anyway? ##PT006## I used a shed load of journals to back up my clinical reasoning, so I'd find quite a few for each of my topics, so I'd try and find something to back up …I can remember doing my respiratory clinical reasoning and I was doing weaning and exercising so I was kind of looking at journals that supported my use of exercising in the ITU and the different…and the arguments that were going on in the literature around it and then the exercising on the ward post op, post op complications…both going into the medical side of it for knowing what the normal rates are, and kind of the physio intervention using…finding a journal or a few on each of the things that I am likely to want to discuss to kind of give me a rounded knowledge.	Clinical reasoning examinations drive the engagement with EBP. Doing EBP increases knowledge base in a particular area of physiotherapy. EBP is a learning tool.
HM 854-863	##SV001## What were the issues with the papers on ITU and exercise? ##PT006## There were different ones about as to whether you should and how you should achieve it, there was one about how they wanted you…there was some debate about them and I think some of them were a bit older they were looking back and they were going on about that if you march somebody you'd be more likely to make them breathe more apically and therefore you are just increasing the ventilation of …you are not using it to reverse basal atelectasis and that sort of side of it.	Clinical knowledge enables critical appraisal of theory. Appraisal of theory takes place at student level. Appraisal of articles keeps knowledge from articles explicit (content of articles is learnt by critically appraising articles).
HM 897-912	##SV001## What were the main drivers then for you picking up those articles for your clinical reasoning? ##PT006## To support…to support…the whole point of clinical reasoning is that you justify your treatment and why you are doing it, so I was able to cite research to back up why it was I was doing for what I was doing. ##SV001## But were you doing it for your clinical reasoning or were you doing it for your patient? ##PT006## It probably happened, in all honestly retrospectively, I did	Using articles and EBP in clinical reasoning exams was about learning as much as possible for the benefit of the patient.

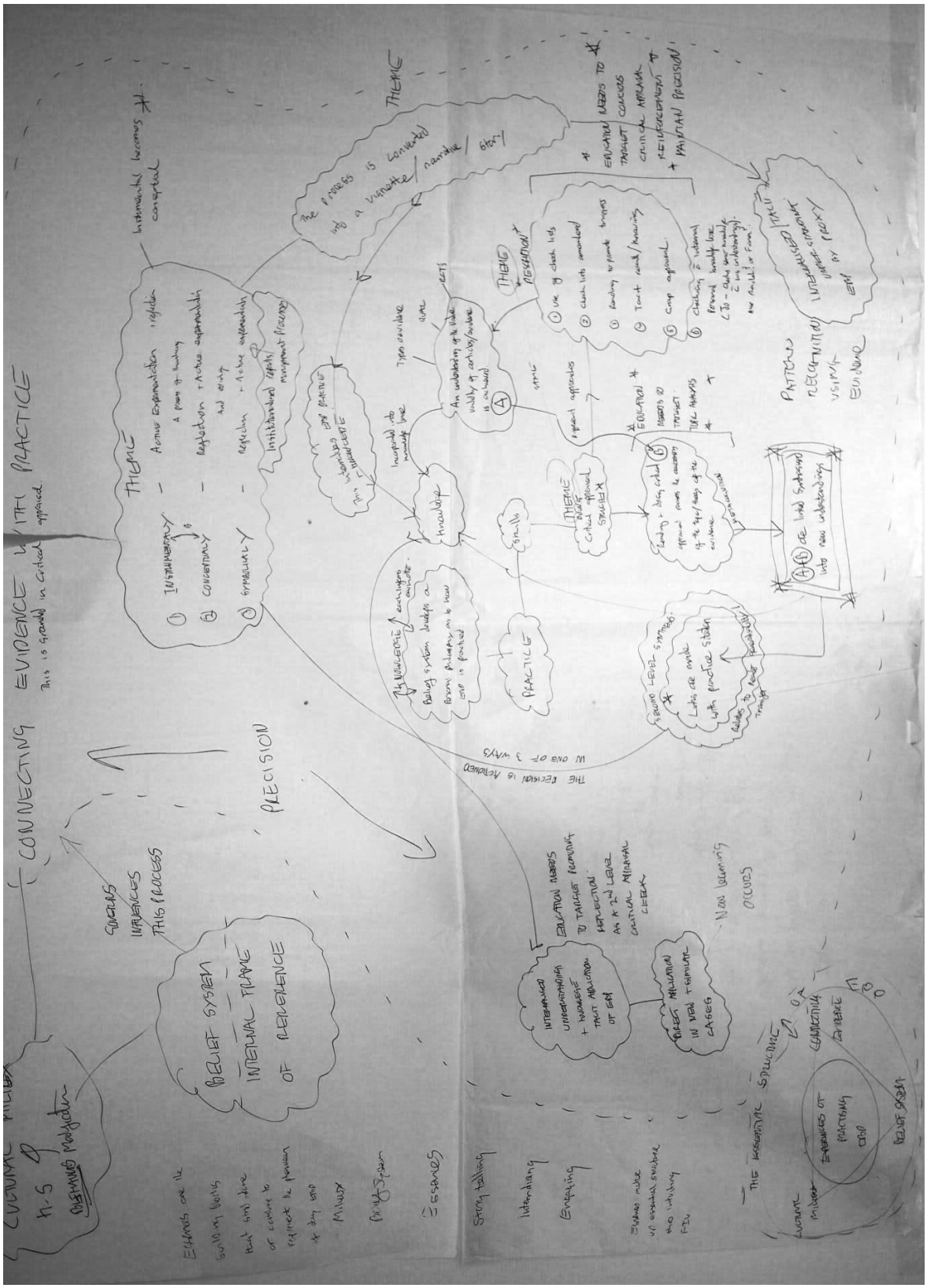
	whatever I did with the patient and then went away and read but I found that I learnt a phenomenal amount by doing this with clinical reasoning, and I actually did quite a lot of work during the placement and try and expand and I learnt so much.	

Appendix IX: Mind Maps and Theme Construction

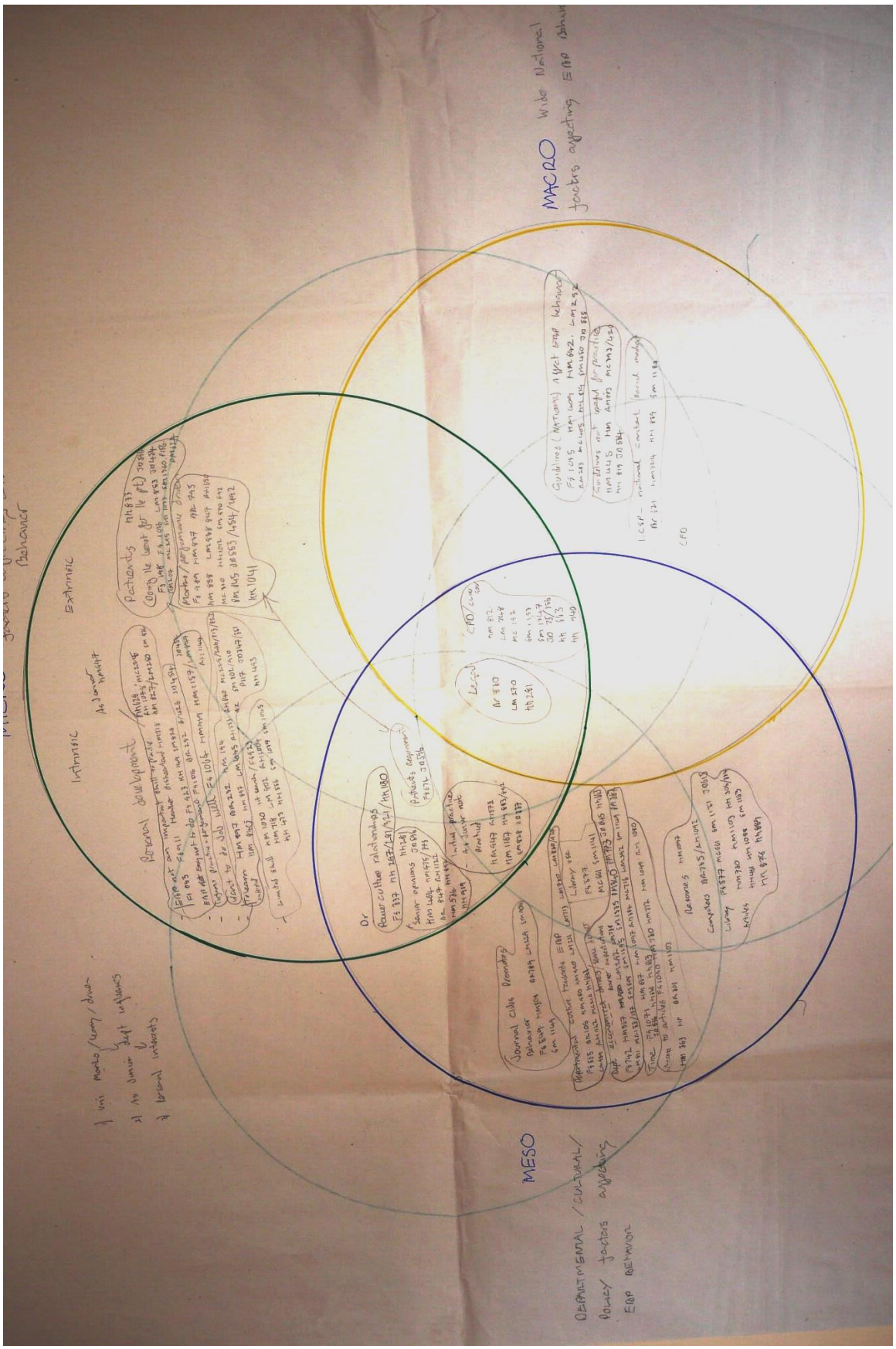
Mind Map: Theme 1: A Personal Theory of EBP



Mind Map: Theme 2: Translating Evidence into Practice



Mind Map: Theme 3: The Impact of Intrapersonal, Social and Cultural Milieus on EBP Behaviour



Appendix X: The Essential Structure of Evidence Based Practice Followed by a Selection of Participant Comments.

The Essential Structure of EBP

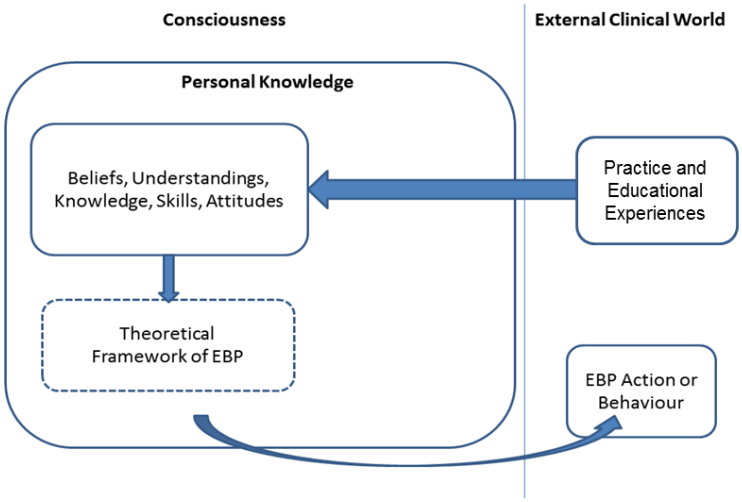
By investigating the aims of this study and answering the research question, "*What is the essential structure (essence) of practising EBP from the perspective of physiotherapists?*" essences or discrete units of meaning were consolidated into three separate but interrelated themes:

1. A personal theory of EBP
2. Translating evidence in to practice
3. The impact of intrapersonal, social and cultural milieus on EBP behaviour

A summary of these themes, essences and the interconnectedness between them will follow and represents the essential structure of practising EBP.

The phenomenon of EBP is not a tangible product but a cognitive process that takes place within the consciousness of individuals (physiotherapists) leading to meaningful action in the external clinical world and is represented in Figure 7.1. Physiotherapists, in this study, had developed a set of beliefs, understandings, knowledge, skills and attitudes about EBP based on their education and practice experiences. These beliefs and understandings about EBP became incorporated into their personal knowledge base (personal understandings about the theory and practice of EBP) and in depth interviews probed this knowledge and identified a theoretical and practice framework of EBP. This theory and practice framework guided evidence based practice action and behaviour in the external clinical world.

Figure 7.1: A Developing Evidence Based Practice Theoretical Framework



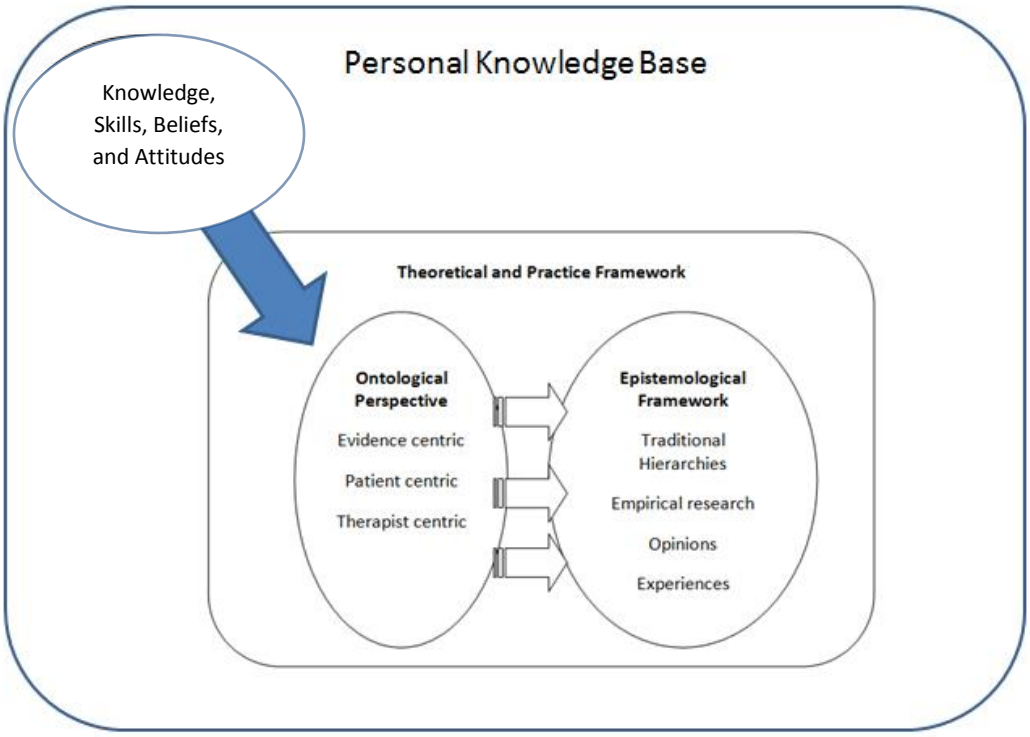
Within an individual's theoretical framework of practice a personal theory of evidence based practice existed that guided behaviour (Theme 1); physiotherapists had developed a working philosophy which underpinned the practice of EBP. Three different ontological perspectives of the reality of evidence based practice existed within this personal theory (Figure 7.2); and participants adopted a particular view depending on the clinical situation they encountered. One view revolved around the idea that, for the therapist, evidence was at the centre of the process. This evidence centred view of EBP acknowledged that the evidence itself (for example RCTs or systematic reviews) was of primary importance and was almost sacrosanct in nature. In essence, evidence was at the heart of EBP and it was "*all about the evidence!*" The second ontological view for the therapist revolved around the notion that the patient was of central importance to EBP; for the therapist, the reality of practising EBP was "*all about the patient*". The third perspective focused on the therapists themselves. From this perspective therapists were central to the EBP process and orchestrated the use of evidence for professional use. In this case EBP was "*all about the therapist*".

Physiotherapists had also developed an epistemological framework where different types of evidence (ranging from personal experience, patient experience and values, and colleagues' opinion through to the use of empirical studies such as qualitative research and evidence grounded in traditional hierarchies) had value. Importantly, adopting a particular ontological perspective, albeit tacitly, influenced the type of evidence that physiotherapists considered for decision

making. For example, if there was a need to determine treatment “effectiveness” then an evidence centred perspective dominated and evidence associated with traditional hierarchies took precedence over other sources of evidence; systematic reviews and the ubiquitous RCT were deemed to be of prime importance. In contrast, if the needs of the patient were important then a patient centred view dominated leading to the selection of “any type of evidence” within a broad epistemological framework. In this case, evidence was deemed to be important if it held value for the patient. Evidence in this context was not limited to traditional hierarchies but wider sources of evidence were considered that included empirical research and physiotherapy theory as well as anecdotal accounts from patients, carers and colleagues. If the evidence held value for the patient then a pragmatic decision was made to use it within the context of the clinical situation. Similarly, if the needs of the therapist were of prime importance, then a therapist centred view of the reality of EBP dominated and evidence was considered to be of use, and was selected, if it held value for the therapist. In this instance the therapist’s preference for the choice of evidence was rooted in traditional hierarchies of evidence but theory, qualitative research and experience were considered but were deemed to be of secondary importance.

In summary (Figure 7.2), as a consequence of education and practice experience, personal beliefs, knowledge, attitudes and the clinical context in which EBP took place predisposed individuals towards a particular ontological perspective. The adopted ontological perspective acted as a lens by which evidence was selected from an epistemological framework that consisted of experience through to the use of empirical research.

Figure 7.2: Ontological Perspectives Leading to the Selection of Evidence



Before evidence was applied and used in practice other important cognitive processes took place and related to the skill domains of acquiring and appraising and applying evidence (Theme 2). These domains were introduced to participants at university. Finding and acquiring evidence was not a well-developed skill although fundamental understanding and basic skills of literature searching were apparent. Appraising evidence for its validity and usefulness was, however, deemed to be an important stage and represented the key skill domain of EBP.

Appraisal of evidence was the primary component of the practice of EBP and different approaches were taken. Validated checklists, such as those published by SIGN and CASP (CASP 2013) formed the foundation of critical appraisal. Inexperienced therapists relied on published checklists, which were important to them because concepts of appraisal had not been learnt and internalised into their personal knowledge base. This method was precise in that the systematic use of checklists ensured all-important appraisal points were covered but inefficient in terms of time taken to appraise.

As appraisal experience increased understandings of appraisal concepts became learnt and internalised and this predicated a move towards the use of appraisal

knowledge and a move away from the use of checklists. This was a more efficient way of appraising evidence; there was a reliance on the use of internalised appraisal concepts as opposed to time intense systematic approach of using ten-point checklists. This approach, however, was less precise and robust in that some concepts were ignored, forgotten or misunderstood.

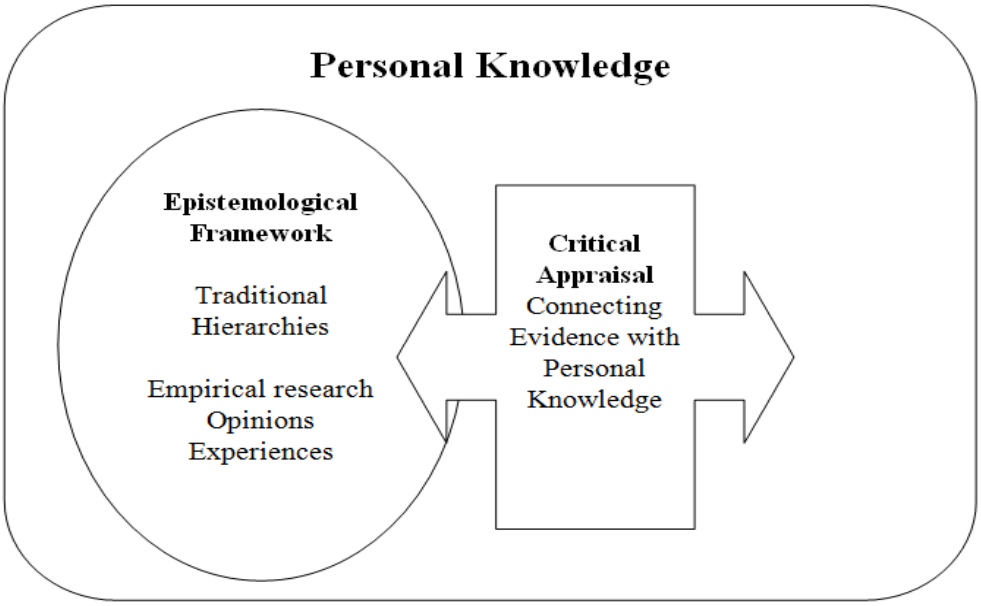
For the most part, a balanced critical appraisal took place, one that used checklists in formal situations (ensuring precision and rigour) coupled with an approach that relied on the use of learnt appraisal knowledge in less formal situations, an approach that was less precise but more efficient for the clinician in the clinical environment.

Notably, the above approaches were conscious and explicit processes that required active thought. The appraisal process required thinking about concepts such as randomisation, the number of subjects and the generalisability of the findings. Subsequently the use of learnt knowledge and checklists was a metacognitive process, a process that required active and conscious thinking about the concepts of appraisal.

For some participants, as appraisal expertise developed, there was a move away from conscious appraisal to one that relied on “judgement” and feeling. This approach was intuitive and relied, tacitly, on previous learning and understanding of the appraisal process. Evidence was read and, at the same time, a subconscious act of appraisal occurred; this led to participants developing a feeling about the value of evidence based on their tacit understandings of the appraisal process. This approach was efficient and effortless compared to the active approach of using checklists but lacked precision and rigour.

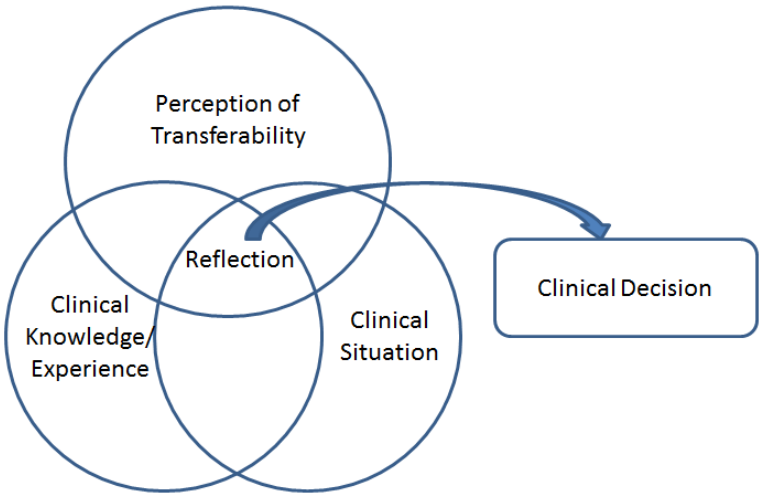
There was more to the appraisal process than establishing the validity and worth of evidence. An additional benefit was identified, in that critical appraisal connected the content derived from evidence with the individual. For example, critical appraisal was the conduit by which findings from research entered into the personal knowledge base ready for use for clinical practice. Evidence was appraised and key messages for practice were incorporated into an individual’s knowledge base as a precursor for meaningful clinical action. The act of appraisal connected the content of evidence with the individual and represented the first part of translating evidence into practice (Theme 2) (Figure 7.3).

Figure 7.3: Critical Appraisal, Connecting Evidence with the Individual



Translating appraised evidence into practice was a complex metacognitive process whereby individuals synthesised their understandings of the evidence within a specific clinical situation. A clinical decision was attained by reflecting on three interlinked components: the practitioners' perceptions and beliefs about the transferability or generalisability of the evidence; their clinical experiences and clinical know how; and the current clinical situation. This reflection on their internal understandings of the value of evidence with the external world of clinical practice enabled participants to make a judgement to "transfer" the evidence into clinical practice (Figure 7.4).

Figure 7.4: Reflection and Translating Evidence into Practice



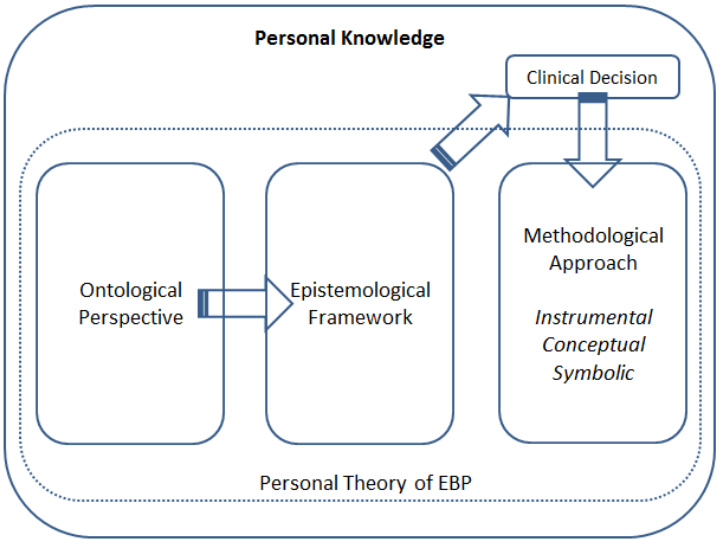
Once a clinical decision had been made participants then transformed the decision into a meaningful action. Evidence was used in three ways; ***instrumentally, conceptually*** or ***symbolically*** (Estabrooks 1999:204) and formed the third component of an individual's personal theory of EBP (Figure 7.5).

Instrumental use of evidence is associated with those individuals who develop an evidence centred view of EBP and determine that findings derived from RCTs are of primary value. These practitioners (physiotherapists "having a go" or "having a bash" at using evidence) apply research findings directly into practice or translate them into useable objects that guide their actions, such as guidelines, clinical standards or protocols.

In a different context, if the ontological view was therapist-centric, then evidence was selected from a broad epistemological framework and centred on the therapist's individual requirement. In such cases, evidence was used ***conceptually*** to inform thinking and understanding, which subsequently led to a change in action within the clinical environment.

In another example, ***symbolic*** use of evidence was associated with practitioners who needed to use evidence as a persuasive or political tool usually for justifying service delivery or improvement or if there was a real political need to affect change for patients. In such cases evidence could be viewed through any of the ontological lenses leading to a broad selection of evidence, but importantly political agendas needed to be addressed.

Figure 7.5: Methodological Approach: The Process of Implementing Evidence

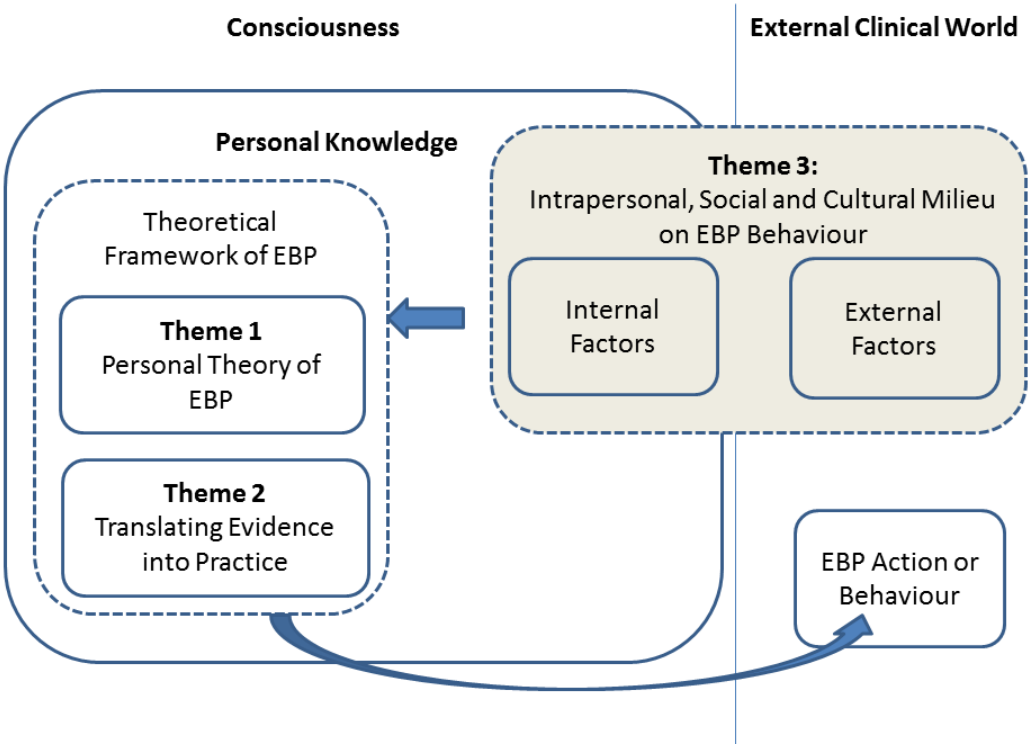


Once evidence had been utilised and applied either instrumentally, conceptually or symbolically, the evidence was evaluated for its effectiveness; this happened either through reflection, self-evaluation, feedback from patients, or the use of outcome measures. Participants developed further understandings as a consequence of the evidence based practice "event" and new understandings and experiences were stored in their personal knowledge base ready for future use.

The selection, appraisal, transference and application of evidence into practice took place within a personal and clinical context and, as such, influenced and affected evidence based practice behaviour (Figure 7.6). The third theme, the impact of intrapersonal, social and cultural milieu on EBP behaviour explained this relationship. Intrapersonal factors, factors from within the individuals themselves, influenced and moderated their evidence based practice behaviour. Intrapersonal factors included ***the need to learn***, ***the need to deliver effective patient care***, and ***knowledge and skills***. Factors such as the need to improve patient care acted as significant motivators to engage with EBP, whereas lack of knowledge and understanding of EBP precluded engagement and behaviour. Similarly, factors external to the individual influenced and affected EBP behaviour. External factors included the organisational and social culture in which EBP took place, competing time pressures and the influence of departmental culture as well as

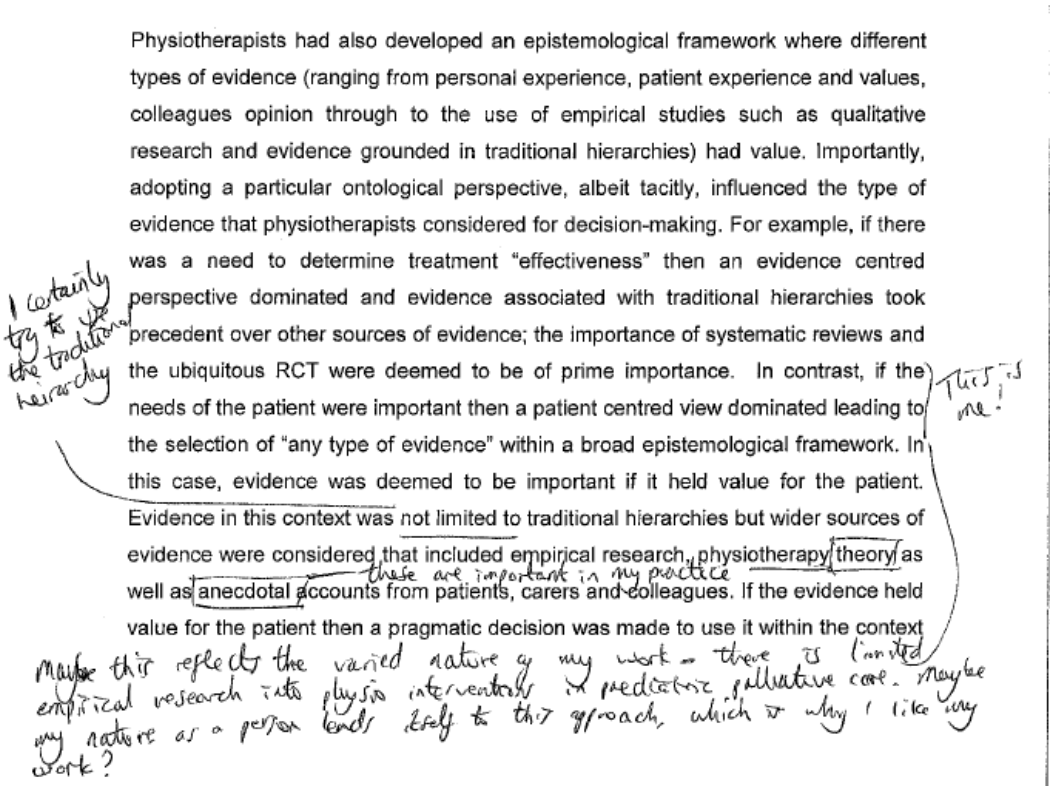
wider national and legal factors; for example, the requirement to maintain professional registration all influenced behaviour.

Figure 7.6: Internal and External Factors Influencing EBP Behaviour



The above description represents the essential structure of practising EBP, a structure whereby physiotherapists, through educational and practice experiences, have developed a set of beliefs that predispose them towards a personal theory of EBP. The practice of critical appraisal enables individuals to connect evidence with their personal knowledge and through reflection a decision is made to transfer evidence into practice. This is put into action through one of three different methodological approaches that take place within an individual and clinical context in which intrapersonal and cultural factors impact and influence the resultant evidence based practice behaviour.

Example of Participant Comments on the Essential Structure



Physiotherapists had also developed an epistemological framework where different types of evidence (ranging from personal experience, patient experience and values, colleagues opinion through to the use of empirical studies such as qualitative research and evidence grounded in traditional hierarchies) had value. Importantly, adopting a particular ontological perspective, albeit tacitly, influenced the type of evidence that physiotherapists considered for decision-making. For example, if there was a need to determine treatment "effectiveness" then an evidence centred perspective dominated and evidence associated with traditional hierarchies took precedent over other sources of evidence; the importance of systematic reviews and the ubiquitous RCT were deemed to be of prime importance. In contrast, if the needs of the patient were important then a patient centred view dominated leading to the selection of "any type of evidence" within a broad epistemological framework. In this case, evidence was deemed to be important if it held value for the patient. Evidence in this context was not limited to traditional hierarchies but wider sources of evidence were considered that included empirical research, physiotherapy theory as well as anecdotal accounts from patients, carers and colleagues. If the evidence held value for the patient then a pragmatic decision was made to use it within the context

I certainly try to use the traditional hierarchy

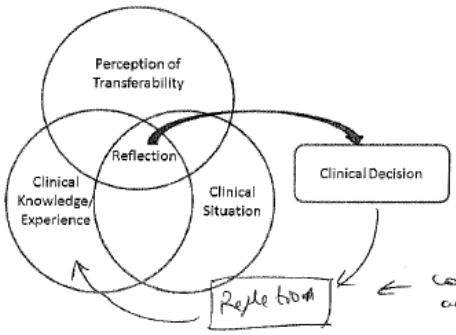
This is me.

these are important in my practice

Maybe this reflects the varied nature of my work - there is limited empirical research into physio interventions in paediatric palliative care. Maybe my nature as a person leads itself to this approach, which is why I like my work?

transferability or generalizability of the evidence; their clinical experiences and clinical know how, and the current clinical situation. This reflection on their internal understandings of the value of evidence with the external world of clinical practice enabled participants to make a judgement to "transfer" the evidence into clinical practice (Figure 7.4).

Figure 7.4: Reflection and Translating Evidence into Practice



Once a clinical decision had been made participants then transformed the decision into a meaningful action. Evidence was used in three ways; ***instrumentally,*** ***conceptually*** or ***symbolically*** (Estabrooks 1999:204) and formed the third component of an individual's personal theory of EBP (Figure 7.5).

Instrumental use of evidence is associated with those individuals who develop an evidence centred view of EBP and determine that findings derived from RCTs are of primary value. These practitioners (physiotherapists having a "go or having a bash" at using evidence) apply research findings directly into practice or translate them into useable objects that guide their actions, such as, guidelines, clinical standards or protocols.

Notably, the above approaches were conscious and explicit processes that required active thought. The appraisal process required thinking about concepts such as randomisation, the number of subjects and the generalisability of the findings. Subsequently the use of learnt knowledge and checklists was a metacognitive process, a process that required active and conscious thinking about the concepts of appraisal. I tend to use this method more with a subject that is new to me. E.g. having just completed the injection therapy module, I might appraise injection articles in this more formal way as the skill is less familiar to me.

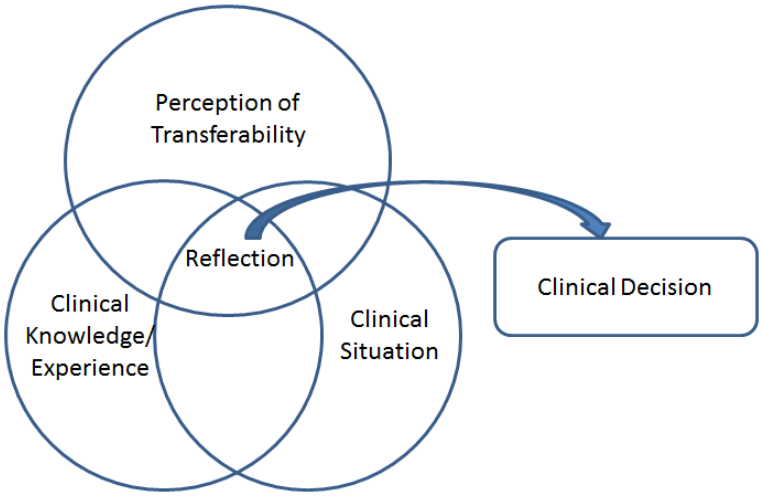
For some participants, as appraisal expertise developed, there was a move away from conscious appraisal to one that relied on "judgement" and feeling. This approach was intuitive and relied, tacitly, on previous learning and understanding of the appraisal process. Evidence was read and, at the same time, a subconscious act of appraisal occurred; this led to participants developing a feeling about the value of evidence based on their tacit understandings of the

appraisal process. This approach was efficient and effortless compared to the active approach of using checklists but lacked precision and rigour. I feel I agree with this more as I develop more confidence and experience in certain areas of my physio skills, e.g. acupuncture, manual therapy. I would have used this less as a student / newly qualifies PT, and use it less with newly developed skills.

Participant SM

I would agree that the context of the situation will impact on how evidence is viewed and implemented into practice. I feel that I still first and foremost try look for the higher level quality types of evidence, but as I have become increasingly aware of areas of limited rigorous evidence, I would look at other types of evidence to consider a particular action, particularly if it was potentially of benefit to the patient. I think the first two viewpoints 'all about the evidence' or 'all about the patient' are easier to get a grasp of than the 'all about the therapist' perspective.

I fully agree with how the process of appraising evidence evolves from using checklists, moving to a more internalised judgement based process. I think I have developed a sort of internal checklist I go through when reviewing evidence.



I think the process of reflection on evidence in the context of the clinical situation is vital to how the evidence is used and applied. This diagram really clearly sums this up.

I think I use all 3 of the techniques described. I think the symbolic use is relatively new to me, but as we have to make the case for funding particular pieces of equipment more and more, using evidence to 'back us up' is definitely a useful way of working.

The culture of where you work has a huge impact on how you use evidence and I feel very lucky to work in an environment where 'what is the evidence?' or 'what other options are available?' are common questions. This makes you feel empowered to go out and read up, reflect and try and bring changes to the work place. I have also worked in teams where this was not the case and it can impact significantly on motivation to engage with evidence.

Appendix XI: Publications.

World Confederation for Physical Therapy

The World Confederation for Physical Therapy (WCPT) represents the physical therapy profession worldwide

WPT2011 is hosted by

de Fysiotherapeut

World Physical Therapy 2011

16th International WCPT Congress
20-23 June 2011 Amsterdam Holland
www.wcpt.org/congress

Programme

13:45-15:15 Focused symposium

Qualitative research evidence: how does it contribute to evidence-based practice?

Venue: RAI: Auditorium

Presenters: Christine Carpenter (United Kingdom), Simon Igo (United Kingdom), Patty Solomon (Canada), Franziska Trede (Australia)

Learning objectives

1. To review the unique foundational characteristics of qualitative research.
2. To discuss issues related to critically appraising qualitative research and developing qualitative evidence.
3. To examine the contribution qualitative evidence can make to physical therapy practice at the macro-, meso- and micro- levels of service delivery.

Description

Early definitions of evidence-based practice promoted the idea of a hierarchy of 'scientific' evidence associated with experimental research approaches. Qualitative research has not been consistently included in academic curricula and has typically been taught and evaluated by comparing and contrasting it with quantitative approaches. However, the complexity of health care issues, particularly related to rehabilitation and community care, has made broadening the definition and application of evidence an imperative.

Practitioners need to understand a diversity of research methods in order to assess the value of research evidence and effectively apply in their practice. This symposium will give physical therapists the opportunity to review their understanding of what qualitative research is and engage in the most current debate about how qualitative studies can be critically appraised and qualitative evidence generated and classified. A qualitative critical appraisal framework will be introduced; made available to the participants and used to focus the discussion. The contribution of qualitative evidence to our understanding of contemporary physical therapy and rehabilitation practice will be explored. The implications of conducting qualitative research and incorporating qualitative evidence in 'real' practice will be discussed.

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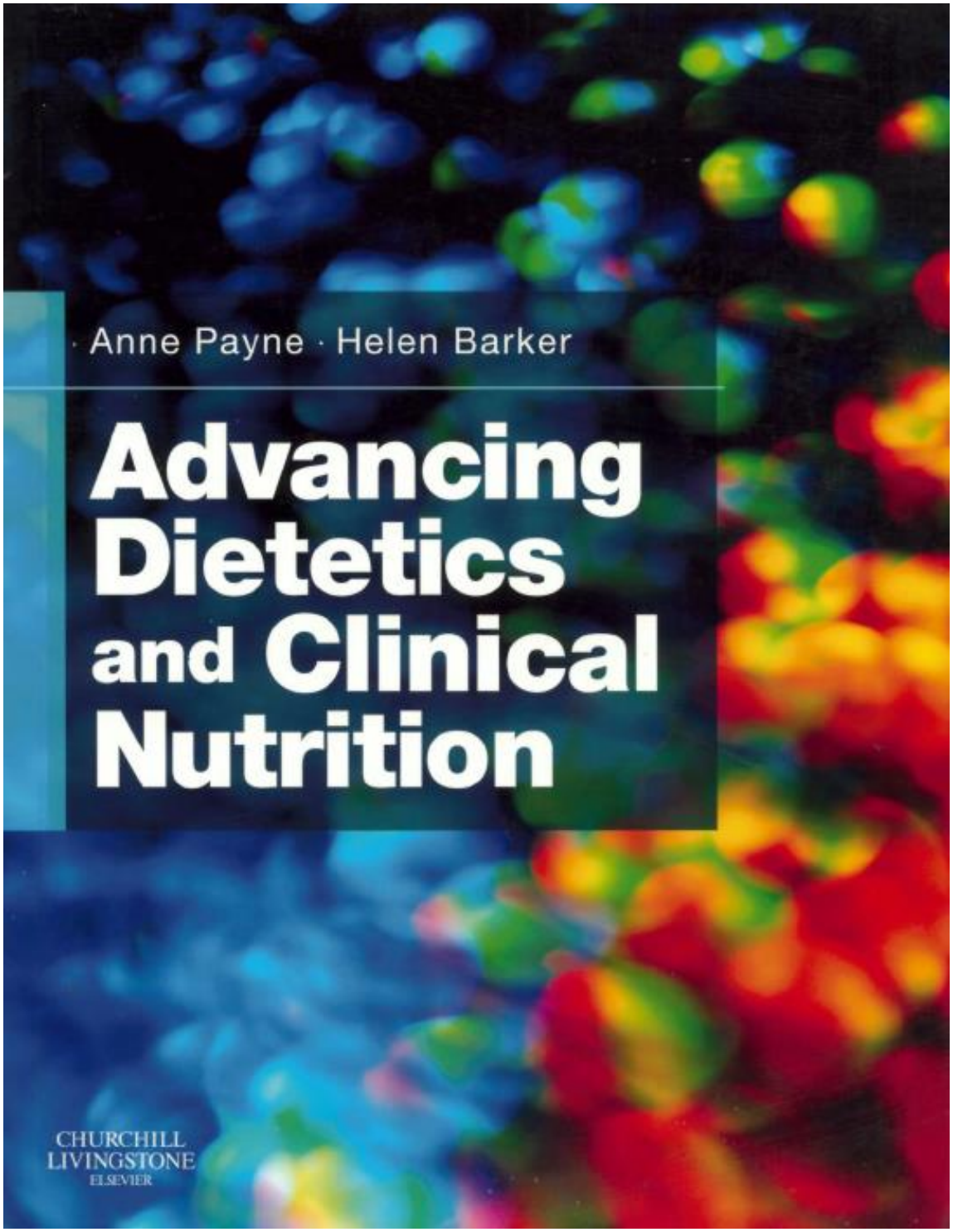
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1

Evidence-based practice

Defining the nature of best evidence for policy and practice

Simon Igo

Introduction

Evidence-based practice (EBP) is a ubiquitous term in dietetic practice and has become a major policy theme in the modernisation of the British National Health Service. One of the biggest challenges for the modern-day healthcare professional, manager and policy maker is to apply the principles of evidence-based practice in a changing and complex clinical, political and economic healthcare arena.

An evidence-based approach in dietetic practice is founded on 'a model of clinical reasoning that uses a systematic process to integrate best evidence (research) with clinical expertise and patient values to optimise patient care'.[1–3] Engaging with clinical research and other forms of 'best evidence' widens the professional knowledge base, contributes towards improved patient care, leads to economic savings in healthcare practice and improves knowledge and skill development in dietetic practice.[4]

Despite the perception of being ubiquitous, some authors argue that EBP has not achieved the acceptance that it set out to accomplish; common reported barriers that preclude the application into clinical practice include an inflexible organisational culture, inadequate resources (time, staffing or finance), insufficient skills and limited knowledge.[5–8] In addition to these political, economic and organisational barriers there are fundamental philosophical concerns that relate to the theoretical framework that underpins EBP. Essentially, the process of EBP is grounded on the premise that best evidence in the form of high-quality research will enable sound clinical decision-making. However, critical debate as to what constitutes best evidence and how to apply evidence remains, at best, confusing. Thus healthcare practitioners and policy makers remain uncertain about the nature and application of an EBP approach to healthcare decision-making.[9,10]

This chapter will revisit the notion of best evidence and will offer a pragmatic and practical classification that will help dietitians to understand the nature of best evidence and to understand how to apply best evidence in healthcare practice.

From evidence-based medicine to evidence-based practice

In its simplest form evidence-based medicine (EBM) is an approach to clinical problem solving: it is defined as 'the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients';[1] a process of systematically finding, appraising and using research findings to inform healthcare practice, and follows four basic steps:

1. Formulate a clear clinical question from a patient's problem;
2. Search the literature for relevant clinical articles;
3. Evaluate (critically appraise) the evidence for its validity and usefulness; and
4. Implement useful findings in clinical practice.[11]

Liberati and Vineis trace the origins of EBM back to mid-nineteenth-century Paris where proponents

of a new movement called 'medicine d'observation' were attempting to reject the notion of medical care-based speculation[12]; however, it is widely accepted that modern contemporary practice originated at McMaster's University in 1981. The faculty of the Department of Clinical Epidemiology and Biostatistics published a series of articles for the *Canadian Medical Association Journal* that taught clinicians how to critically appraise medical literature, and developed an awareness of the relationship between research and clinical practice.[13]

This philosophical approach was formalised in 1992 in a paper written by the Evidence Based Medicine Working Group (EBMWG) the authors present the reader with two alternatives for clinical decision-making.[14] The first, 'the way of the past', novice physicians seek expert and experienced opinion from authorities higher in the medical hierarchy: expert opinion and past precedent informs practice. However, a second and more robust option is presented, one that represents a shift away from opinion towards the critical use of medical literature to enable physicians to make sound clinical judgements; this method was seen as 'the way of the future' and the term 'evidence-based medicine' was coined.

Understanding the origins and history of the evidence-based medicine movement identifies that EBM evolved within a biomedical philosophy and has been shaped by key thinkers in the medical, biological, epidemiological and statistical sciences. Early adopters developed EBM within a positivist research framework, the premise being that the use of empirically based quantitative research methodologies would answer patient dilemmas and solve the issue of using non-substantiated evidence in the form of personal opinion.

The term evidence-based 'medicine' was rejected by healthcare professions such as dietitians and other professions allied to health on the grounds that the medical model of clinical decision-making did not reflect the different scientific philosophies, professional values and approaches to healthcare.[15,16] Professions allied to health have different professional identities and values that are paradigmatically different to that of medicine. Subsequently, an alternative term was adopted, one that accepted other forms of evidence and enabled clinical decision-making in a wider professional context. The term 'evidence-based practice' was created, a process that evolved from the school and teachings of EBM but recognised a broader selection of evidence within the context of healthcare.[13]

Defining best evidence

So what do we mean by best evidence in dietetic practice and how should we apply best evidence in the clinical setting? Traditionally evidence has been categorised into hierarchies constructed within an empirically based positivist research paradigm. Hierarchies classify evidence in terms of how valid the results are for determining the effectiveness of an intervention. Systematic reviews, randomised controlled trials (RCTs) and other quantitative-based approaches are used to help determine the effectiveness of clinical practice; the more robust the research method, the more valid the result. Moore proposed one such hierarchy of evidence combining primary and secondary research methods and, to date, it still underpins the use of quantitative-based research in EBP (Table 1.1).[17]

A brief critical review of such hierarchies quickly reveals the noticeable absence of other sources of evidence including qualitative naturalistic research. This raises some fundamental questions for practising dieticians: How appropriate are such hierarchies and are we missing other sources of important evidence? What about the nature of interpretive research paradigm using qualitative research methodologies and where does clinical knowledge fit into the EBP framework? To answer these questions it is necessary to revisit what we mean by best evidence and consider other forms of clinical research, our clinical knowledge and practice experience, and the notion of reflective practice when we attempt to apply and use best evidence.

Table 1.1 Moore's original evidence hierarchy

I	Strong evidence from at least one systematic review of multiple well-designed randomised controlled trials.
II	Strong evidence from at least one properly designed randomised controlled trial of appropriate size.
III	Evidence from well-designed trials without randomisation, single-group pre-post cohort, time series or matched case controlled studies.
IV	Evidence from non-experimental studies from more than one centre or research group.
V	Opinions of respected authorities, based on clinical evidence, descriptive studies or reports from expert committees

The nature of best evidence

The previous section has identified that the use of ordered quantitative-based evidence is useful but perhaps limited for the complex clinical arena that constitutes dietetic practice. The philosophy that clinical research should be used to inform practice is at the heart of the EBP movement, but it needs to be defined so that it can be applied within the context of clinical practice.

Fundamentally research, or research-based knowledge,[18] can be categorised into two broad camps, the 'empirico analytical paradigm' and the 'interpretive paradigm'.[19] Evidence associated with the former includes methods associated with quantitative research methodology but also incorporates biological and pathological theory.[10] Evidence that sits in this framework of knowledge is invaluable for informing practice and policy relating to treatment, therapy and diagnosis.

Evidence associated with the 'interpretative paradigm' includes research approaches framed within qualitative methodology including studies allied to humanities and social science. The importance of such evidence is no less important than its quantitative cousin but it seeks to answer different clinical questions. Using evidence, framed within the interpretive paradigm, allows policy makers and clinicians to understand the nature of the healthcare experience and will allow for a deeper understanding of healthcare behaviour.

So when faced with a particular clinical dilemma or situation classifying the nature of evidence into an 'empirico analytical' or 'interpretive' framework begins to narrow down the type of evidence that could be used to help understand the key issues in clinical practice; identifying the type of evidence for clinical decision-making is elaborated in the next section.

Methods for translating evidence into practice: choosing the right question

The previous section briefly summarises two separate research paradigms; understanding where evidence falls within these frameworks is the key to applying best evidence. But how should evidence be applied?

Mulhall recognises the need for using appropriate sources of evidence and offers an intuitive approach, an approach commensurate with clinical reasoning.[20] Mulhall suggests that the clinical question dictates the choice of evidence. Like research questions the clinical question can be categorised in terms of their purpose and the purpose of the clinical question can be aligned to one of the research paradigms indicating a choice of evidence to help inform clinical practice.[21] Examples of three types of clinical questions, explanatory, exploratory and descriptive, are given below.

Explanatory clinical questions

Explanatory clinical questions are created and constructed within the empirico-analytical paradigm; these questions are specific, and they seek to answer clinical issues that relate to testing an idea or hypothesis relating to clinical effectiveness. Consequently, research designs grounded in quantitative research methodology are used to answer these types of clinical questions.[21] An example explanatory clinical question is given below.

'Does taking vitamin supplements improve cognitive function in the elderly population?'[22]

Research methods that could be used to answer such explanatory questions include the following:

Primary research

- Experimental studies (to enable the detection of direct causal relationships):
  - Randomised controlled trials;
  - Comparative studies;
  - Uncontrolled trials; and
  - $n = 1$ trials.
- Observational studies (to investigate causal associations):
  - Cohort studies;
  - Prospective cohort;
  - Case-control studies;
  - Retrospective cohort.

Secondary research

- The systematic review (a systematic appraisal and summary of primary research).

Exploratory clinical questions

Exploratory clinical questions have a function different to that of explanatory questions and consequently are grounded in a separate research paradigm, in this

case the interpretive paradigm. Here the clinical question seeks to find answers that aim to explain human activity and behaviour within a healthcare context.[21] Exploratory-type questions are answered through critical engagement with research approaches grounded in qualitative methodology. An example exploratory clinical question is given below.

'What are the problems with mothers breastfeeding their children?'[23]

Developing an understanding of the lived experiences of mothers feeding their children would give valuable insight into the joys and real world problems and benefits of breastfeeding. Understanding the context in which this health behaviour operates would inform the direction of clinical practice and dietary advice. To answer such questions qualitative methodologies need to be considered and include:

- Phenomenology;
- Ethnography;
- Grounded theory; and
- Action research.

Descriptive clinical questions

The descriptive clinical question blends both the empirical analytical paradigm and the interpretive paradigm to underpin the construction of this type of question. Descriptive questions provide a descriptive account of a phenomenon within an established framework of knowledge, rather than establishing a cause-and-effect relationship or providing an exploration into healthcare behaviour.

Methods associated with answering descriptive clinical questions relate to 'survey' approaches to research and include the notion of clinical audit.[21] An example descriptive question is detailed below:

'What are the current dietetic practices for the management of overweight and obese clients?'[24]

Evidence that should be considered to answer such questions would include:

- Non-analytical observational studies (descriptive studies);
- Cross-sectional studies (surveys);
- Longitudinal studies (surveys); and
- Clinical audit.

The above account identifies that evidence sits within a body of espoused knowledge and that two research paradigms support the notion of what constitutes best evidence. It has been argued that evidence grounded in positivism is only a small portion of the professional knowledge base and that other forms of research evidence are available, including methods in qualitative research and methods associated with survey research and clinical audit. Constructing a clinically focused question and framing it within a theoretical context allows the evidence-based practitioner and policy maker to judiciously select appropriate best evidence from within a body of professional knowledge.

Widening the knowledge base: the role of reflection in EBP

Finding, selecting and critically appraising evidence in preparation for practice is only part of the EBP process; the next step is to apply and translate the evidence to a particular clinical situation. Rolfe and Gardner identify that advice from the original EBMWG paper suggests that the practitioner should use evidence in a stepwise process and only look at lower forms of evidence in the hierarchy if more robust methods have not been conducted.[25] This stepwise application of evidence into clinical practice is perhaps too simplistic and counterintuitive to the clinical reasoning process. Rolfe and Gardner suggest that there is confusion as to how evidence should be applied and Rycroft-Malone discuss that standards for determining whether research or evidence is appropriate and how it should be applied for a particular patient context have not yet been developed.[26] The stepwise application of evidence may be suitable as a foundation for applying evidence but is perhaps too dogmatic and is based on the notion that evidence determines practice. Mantzoukas as well as Mantzoukas and Watkinson argue that despite the objectivity of the EBP method (identification of a problem, searching the literature, critically appraising best evidence and implementing findings into practice), paradoxically, requires the subjective interpretation of the evidence to a particular situation, the very process, one of intuition and opinion, that the original proponents of EBP aimed to distance themselves from.[27,28] Thus, the final step in the EBP process, the subjective application of evidence into practice, throws the philosophy of EBP into disarray!

Schön acknowledges this type of issue and argues that in reality [clinical] practice is complex, conflicting and uncertain.[29] The simplistic method of EBP (or as Schön describes it 'the technical rational approach to decision making') does not reflect the

complex milieu in which healthcare professions work. This is true when attempting to apply evidence in healthcare practice; the clinician must contend with the ethical framework that governs practice and the political, economic technical and social factors that affect the decision-making process. The clinician also must apply the complex principles of EBP as well as acknowledging the needs and requirements for the patient/client group. Therefore, the final step of the EBP process, applying evidence, does not provide answers for practitioners nor does it guarantee best practice; it becomes subjective and does not adhere to the conscientious and judicious approach espoused by the proponents of EBP.

So how should healthcare practitioners and policy makers contend with this final philosophical issue? Higgs and Titchen argue that the subjective application of evidence is *not* bereft of a theoretical foundation; in fact it represents the artistry, wisdom and intuition of clinical practice.[19] This artistry and wisdom encompasses practical expertise and skills based on experiential knowledge, knowledge gained from practice: a body of knowledge termed practical craft knowledge or aesthetic knowledge.

The idea that intuition and artistry in the form of practical craft knowledge should be used to apply evidence in the complex reality of clinical practice is contrary to the notion of a conscientious and judicious approach to EBP.[15,27] To counter this and to ensure that practitioners operationalise the final stage of applying evidence within the philosophy of EBP, it is important to recognise that intuition, artistry and wisdom play a significant part in the evidence application process. The mechanism by which this can be incorporated into the philosophy of EBP lies with the concept of reflective practice.[27,28] Through the process of reflection, practitioners are empowered to explain and justify their decision-making process and rationalise their choice of evidence for supporting clinical practice; this reflective approach will enable the practitioner to think consciously and judiciously and will enable the selection and application of best evidence. The process of reflection will also ensure that the complex legal, ethical, social and technological issues that underpin the complex milieu of dietetic practice are considered when applying evidence; this reflective approach will ensure that the application of best evidence remains within the philosophy of EBP.

In summary this chapter has proposed that the type of clinical question should determine the nature of evidence used in clinical practice and that the process of reflection should be used to apply best evidence, in conjunction with clinical experience, in a conscientious and judicious way. Evidence should be considered in its broadest sense and it should be recognised that the evidence from a paper, per se, does not determine the treatment approach but the critical and systematic appraisal of its usefulness, blended with clinical interpretation, does.

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